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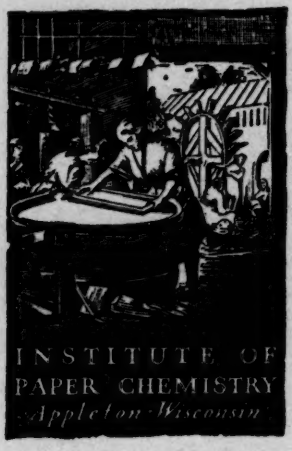
BULLETIN

OF

THE INSTITUTE OF PAPER CHEMISTRY



AFFILIATED WITH

LAWRENCE COLLEGE

APPLETON, WISCONSIN

LIBRARY NOTES

APRIL · 1952

Volume 22 Number 8

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Books and Pamphlets Added to the Library During March

BIOGRAPHY

WHO'S WHO in America; a biographical dictionary of notable living men and women. Rev. and reissued biennially. Vol. 27, 1952-53. Chicago, The A. N. Marquis Company [c1952] 3216 p.

BOARD

JEITTELES, EBERHARD. Pappen-Merkbuch. Frankfurt/Main, Verlag der Allgemeinen Papier-Rundschau P. Keppler [c1952] 79 p.

CONSERVATION OF RESOURCES

[FRANK, BERNARD, and BETTS, CLIFFORD A.] Water and our forests. [Rev.] U. S. Dept. of Agriculture. Forest Service. Agriculture information bulletin no. 71. [Washington, U. S. Govt. Print. Off., 1951] 29 p.

DISSERTATIONS, ACADEMIC

DOCTORAL DISSERTATIONS accepted by American universities 1950-1951 (number 18). Compiled for the Association of Research Libraries, ed. by Arnold H. Trotier and Marian Harman. New York, Wilson, 1951. 266 p.

FORESTS AND FORESTRY

JAMES, LEE M. Mississippi's forest resources and industries. U. S. Dept. of Agriculture. Forest resource report no. 4. Washington, U. S. Govt. Print. Off., 1951. 92 p.

LARSON, ROBERT W. The timber supply outlook in South Carolina. U. S. Dept. of Agriculture. Forest resource report no. 3. Washington, U. S. Govt. Print. Off., 1951. 66 p. + 1 map.

FRESH-WATER BIOLOGY

WELCH, PAUL S. Limnology. 2d ed. New York, McGraw-Hill Book Co., 1952. 538 p.

GASES—ABSORPTION AND ADSORPTION

SHERWOOD, THOMAS K., and PIGFORD, ROBERT L. Absorption and extraction. 2d ed. New York, McGraw-Hill Book Co., 1952. 478 p.

LEADERSHIP

GUETZKOW, HAROLD, ed. Groups, leadership and men; research in human relations. Reports on research sponsored by the Human

Relations and Morale Branch of the Office of Naval Research. Pittsburgh, Carnegie Press, 1951. 293 p.

MATERIA MEDICA

The MERCK index of chemicals and drugs; an encyclopedia for the chemist, pharmacist, physician, and allied professions. 6th ed. Rahway, Merck & Co., 1952. 1167 p.

PAPER—TESTING

AMERICAN SOCIETY FOR TESTING MATERIALS. *Committee D-6 on Paper and Paper Products.* Paper and paperboard; characteristics, nomenclature, and significance of tests. [Rev. ed.] Special technical publication no. 60-A. Philadelphia, The Society, 1951. 126 p.

PRINTING—BIBLIOGRAPHY

MILLS, GEORGE J. Sources of information in the American graphic arts. Carnegie Institute of Technology. Department of Printing Management. Occasional papers no. 2. Pittsburgh, Carnegie Press, 1951. 70 p.

RADIOACTIVE SUBSTANCES

STANFORD RESEARCH INSTITUTE. Industrial uses of radioactive fission products; a report to the United States Atomic Energy Commission. SRI project no. 361. Stanford, Calif., The Institute, 1951. 102 p.

REFERENCE BOOKS—BIBLIOGRAPHY

WINCHELL, CONSTANCE M. Guide to reference books. 7th ed., based on the Guide to reference books, 6th ed. by Isadore Gilbert Mudge. Chicago, American Library Association, 1951. 645 p.

SAFETY

U. S. DEPARTMENT OF LABOR. Injuries and accident causes in the manufacture of pulp and paper. Bulletin no. 1036. Washington, U. S. Govt. Print. Off. [1952] 58 p.

TEXTILE INDUSTRY AND FABRICS

REVIEW of textile progress. Manchester, The Textile Institute, and Bradford, The Society of Dyers and Colourists [1951] v. 2, 1950. 482 p.

VIBRATION

CREDE, CHARLES E. Vibration and shock isolation. New York, Wiley [c1951] 328 p.

WOOD

MERRICK, GORDON D. Wood used in manufacture—1948. U. S. Forest Service. Division of Forest Economics. Forest resource report no. 2. Washington [U. S. Govt. Print. Off.] 1951. 66 p. [no data on pulp included]

Survey of Periodical Articles

The following are abstracts of opinions expressed by writers in the technical journals. The Institute of Paper Chemistry takes no responsibility for the opinions here summarized.

AIR CONDITIONING

JOHANSSON, O. S. A small-scale air-conditioning unit. Svensk Papperstidn. 55, no. 3: 110 (Feb. 15, 1952). [In Swedish]

When testing the influence of different relative humidities on the dimensional stability of paper or board or for similar work, it is quite often not desirable to change the moisture conditions of an entire room. For this purpose a laboratory unit was developed which consists of drying and humidifying sections. These deliver dry or moist air currents, as required, to a mixing compartment in which the relative humidity of the air can be adjusted to any value between 5 and 95%; it is accurately controlled by a precision hygrometer. From the mixing compartment, the air of the desired moisture content is fed to the conditioning chamber in which the actual measurements are carried out; rapid changes are possible. 1 illustration. E.S.

ALUMINUM

ANON. More pan-packages. Modern Packaging 25, no. 7: 236-7, 410 (March, 1952).

Semirigid, one-piece aluminum foil containers are being used as one-trip packages for baked goods. Commercial bakeries have found them to offer the following advantages: preliminary greasing is eliminated because the product does not stick to the smooth surface; on account of the rapid heat conductivity of aluminum, the product bakes more quickly and evenly and cools rapidly; transfer to a take-home container is unnecessary; and the foil containers are an attractive display medium. Consumers find that this type of container offers better protection to the product and keeps it fresh and moist for a longer time; it is especially desirable for oven-to-home-to-oven products. Although subject to defense restrictions, the aluminum foil for containers is available at present in a limited supply. 6 illustrations. M.W.

ASSOCIATIONS

AMERICAN SOCIETY FOR TESTING MATERIALS. Committee D-23 on Cellulose and Cellulose Derivatives formed. ASTM Bull. no. 180 (February, 1952); Packaging Parade 20, no. 230: 154-5 (March, 1952); Chem. Eng. News 30, no. 9: 920 (March 3, 1952).

A new technical committee has been organized by the Society; its immediate objectives are the study and formulation of standard methods of tests, specifications, and definitions of terms concerning cellulose and cellulose derivatives. The personnel of the committee (a list of which is given in the first reference) includes representatives of consumers and producers and a number of national organizations directly concerned; many of these have carried out research and related work in the cellulose field for some time. The need for avoiding duplication of efforts is fully recognized by the organizers of the committee. E.S.

JONES, DOUGLAS. Review of activities of the Technical Section—1951. Pulp Paper Mag. Can. 53, no. 3: 143-6 (Convention, 1952); Can. Pulp Paper Ind. 5, no. 4: 54, 57-8, 60, 62, 64, 68 (April, 1952).

The report of the Executive Secretary of the Technical Section of the Canadian Pulp and Paper Association is presented, covering membership, staff changes, branch and committee activities, liaison with the Research Institute, publications, and awards. E.S.

MACDONALD, R. G. Report of the Secretary. Tappi 35, no. 3: 73-4A, 76A, 78A, 80A (March, 1952); Paper Mill News 75, no. 8: 104, 106, 108 (Feb. 23, 1952); *cf.* B.I.P.C. 21: 531.

The text of the annual report for 1951 of the Technical Association of the Pulp and Paper Industry is presented, covering membership, necrology, meetings and conferences, publications, the TAPPI Fibrary, employment, local sections, and divisions and committees. E.S.

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. Condensations of annual meeting papers. Tappi 35, no. 3: 48A, 50A, 52A, 56A, 58A, 60A, 62A, 64A, 66A, 68A, 70A (March, 1952); Paper Mill News 75, no. 8: 129-30, 133-4, 136, 139-40, 142, 146, 148, 150, 152, 154, 156, 158, 160 (Feb. 23, 1952); Southern Pulp Paper Manuf. 15, no. 3: 102-6, 108-10, 122 (March, 1952); *cf.* B.I.P.C. 21: 531-2.

Condensations of a number of papers are given which were presented at the 37th annual meeting of TAPPI in New York, February 18-21, 1952. E.S.

BAGASSE

ANON. India's new bleached bagasse pulp mill first in Commonwealth. Paper Trade J. 134, no. 10: 12, 14 (March 7, 1952); Paper-Maker (London) 123, no. 3: 192 (March, 1952); World's Paper Trade Rev. 137, no. 12: 824, 827-8 (March 20, 1952).

A bleached bagasse pulp plant at the mill of Rohtas Industries Ltd., Dalmianagar, India, has recently started production, and has attained its rated capacity of 20 tons of bleached pulp per day. This is India's first all-continuous pulping plant (supplied by Cellulose Development Corp. Ltd.) and is similar in design to continuous soda-chlorine straw pulp mills. The bagasse pulp produced at present is used in combination with bamboo pulp in the white surface of duplex and triplex boards. 3 illustrations. M.W.

BARK

ELLWANGER, R. Suspension burning of bark refuse. Tappi 35, no. 3: 108-11 (March, 1952).

Previously classified as a waste product resulting from the operation of paper mills, bark refuse now assumes a prominent place as a low-cost substitute fuel for steam and power generation. A short history of wood burning is presented, from piles to the development of a boiler, furnace, and auxiliaries, which are designed primarily for suspension burning and utilize flash drying and extreme furnace turbulence. Fuel handling and preparation and fuel burning and the combustion system (including an analysis of fly-ash reinjection) are discussed to illustrate the problems encountered in the efficient burning of this material. Data are included on predicted and actual performance, together with efficiencies and carbon loss. 2 tables and 4 figures. E.S.

BARKERS AND BARKING

FOBES, E. W. Portable barker developments. Paper Trade J. 134, no. 13: 22, 24, 26, 28, 30 (March 28, 1952).

Developments in cambium-destruction machines (hammer, drum, hydraulic, and direct-pressure barkers) and knife machines (revolving disks with knives, and fixed cutterhead, floating cutterhead, and fixed-knife machines) are reviewed, and comparative data on production and machine costs are presented. 1 table and 9 illustrations. M.W.

BEATING

CORTE, HEINZ. Correlation between Mahlgrad and tensile strength development of pulp during beating. Tappi 35, no. 3: 124-8 (March, 1952); *cf.* B.I.P.C. 22: 479.

The article is similar in scope to the previous reference, although the two articles are not identical. More experimental data are included in the present discussion. 1 table, 8 figures, and 4 references. E.S.

HYMAN, HOWARD D., and ESPENMILLER, HOWARD P. A practical approach to stock preparation for paper and board. Pulp Paper Mag. Can. 53, no. 3: 264-78 (Convention, 1952).

The authors present a summary of the most important factors in stock preparation for normal papers and paperboards. Practical theories are discussed which illustrate the changes to the fiber as it passes through the stock-preparation system and the reasons why various treatments bring about certain results under the headings: the cellulose fiber; the sheet of paper; the basic equipment; the intimacy between the bars of the beater, refiner, or jordan; the intimacy factor (taking speed, diameter, bar face, bar shape, bar count, power, consistency, turbulence, etc., into consideration); stock freeness; consistency; other stock conditions; chemical additions; equipment fillings; power consumption; and process balance. The three fundamental types of stock-preparation systems (batch, continuous, and batch-continuous) are discussed, with particular reference to the selective treatment which the fibers receive in them, the bar patterns and their thicknesses, broke disposal, and process control. For best results the authors consider it advisable to separate the process into three distinct and separate functions in order to gain maximum quality control: (1) pulping with a minimum of severe mechanical action, (2) refining or beating to produce brushing with a minimum of cutting, and (3) jordaning with a maximum of cutting and a minimum of brushing. Where mixed furnishes are used, the best results can be expected when each type of fiber is treated according to the best practice for that particular fiber, so that an inferior quality does not ensue from a compromise treatment. The system should be balanced between beating, refining, and jordaning to suit the range of end products to be produced. 11 figures and 1 reference. E.S.

BLACK LIQUOR—OXIDATION

TROBECK, K. G. Some data on the oxidation of black liquor. Pulp Paper Mag. Can. 53, no. 3: 225-9 (Convention, 1952); *cf.* B.I.P.C. 22: 163.

This is a complete translation of the Swedish original. E.S.

BLEACHING—GROUNDWOOD

REICHERT, J. S. Peroxide bleaching of groundwood pulp. Paper Mill News 75, no. 12: 91-2, 94 (March 22, 1952).

A typical operation of peroxide bleaching of groundwood is described. Peroxide applications are proving advantageous for upgrading the quality of groundwood, recovered waste papers, and chemical pulps. The outstanding advantages which can be attained include high strength, high brightness, and

exceptionally good color stability. Although it has been in short supply for the past few years, large expansion in production facilities during the next 12 months should provide enough peroxide to meet consumer requirements. M.W.

BOARD

DUNCAN, M. W. Tileboard from Canada's forests. Can. Chem. Processing 36, no. 2: 48-9 (February, 1952).

A process for the manufacture of plastic-surfaced tileboard from tempered Masonite is being carried on at Primco, Ltd., Hull, Que. Following the initial operation, in which the Masonite surface is filled, sealed, and leveled off, it is coated with a knife-coating resin and baked at a high temperature to set the resin and remove any moisture. It is then scored and enameled, and the resins in the enamel are hardened by polymerization at high temperatures. The score line is applied by hand before the enamel is completely polymerized. The final product has a smooth glossy surface which repels dust, grease, acids, and alkalies. 4 illustrations. M.W.

BOARD—CONVERSION

ANDRE PAPER BOX COMPANY, *San Francisco.* A man, a method and a machine. Boxboard Containers 70, no. 711: 6-8, 10, 12, 14 (March, 1952); *cf.* B.I.P.C. 21: 396-7.

The development and operation of the Andre-matic laminator, which can laminate roll-fed boxboard and paper in speeds in excess of 400 ft./min., is described. Either two- or three-ply laminations may be formed under heat and moisture conditions which cause the laminated stock to lie flat for easy processing in later operations. An aniline press and embosser can be arranged in line with the laminator to permit the three units to work simultaneously and electronically synchronized on a continuous web of paper, in combination with either of the other two units, or independently. Through the lamination process any desired colors or designs can be given to the finish of folding boxes. The inexpensive printing operation and reduction in inventory varieties of stock provide for a low-cost operation. 1 table and 8 illustrations. M.W.

ANON. The new Noble Andre factory. Paper Box Bag Maker: 5-7, 10 (January, 1952).

Essentially the same information as in the preceding abstract is given. 4 illustrations. E.S.

BOXBOARD CONTAINERS. Folding paper box finishing operations. Article 4—Greaseproofing by coating. Boxboard Containers 70, no. 711: 23-4 (March, 1952); *cf.* B.I.P.C. 22: 480-1.

A variety of coatings, including paraffin wax, silicates, starch adhesives, latex resins, etc., are used for greaseproofing boxboard. They are applied after printing and before cutting-creasing. The drying procedure, which is critical in successful greaseproofing, varies with the type of coating. A double coating is often recommended because the coatings have a tendency to pinhole. Future developments which are anticipated include spot coating of cartons and special machinery for the application of heat-sealing thermoplastics. 1 illustration. M.W.

BOARD, CORRUGATED

PACKAGING MATERIALS CORPORATION, *New York.* Solid flutes feature of new corrugated board. Packaging Parade 20, no. 230: 172 (March, 1952); Boxboard Containers 70, no. 711: 172 (March, 1952).

A molded corrugated board, called Pillo-Pak, is being produced from waste boxes and wrappings. It is a continuous, molded corrugated sheet which has solid flutes that return to their original shape on removal of the pressure. Because of the inexpensive raw materials used in its manufacture, it can be sold at 75% of the cost of conventional, hollow-flute corrugated board. 4 illustrations in the first and 1 illustration in the second reference. M.W.

BOARD, IMPREGNATED

OHL, FRITZ. Old and new methods for the impregnation of paper. Wochbl. Papierfabr. 80, no. 3: 71-4 (Feb. 15, 1952). [In German]

The author reviews the development since 1940 of German methods for impregnating and lacquering board and containers with paraffin, synthetic resins, and mixtures of different agents. Reference is made to drying difficulties with complete solvent removal and to the possibilities of activated silica sols. E.S.

BOARD DRYING

KLAUDITZ, W., and STEGMANN, G. The fundamental chemical and physical processes which occur in the hot-air treatment of wood fiberboards. Holzforschung 5, no. 3: 68-74 (1951). [In German] *cf.* B.I.P.C. 19: 381.

Evidence is presented that the usual heat treatment which improves the strength and water-repellent properties of fiberboards causes a thermochemical modification in the hemicelluloses, especially the polyuronides, which contributes to the effective binding of the fibers. By heating experimental poplar and spruce fiberboards for two hours at 170°C., the tensile strength and resistance to bending were improved, swelling was almost cut in half, and water sorption was greatly reduced. On the other hand, the D.P. of the cellulose dropped from 1600 in the untreated board to 610 in the treated board. The beneficial effects of the heat treatment were also found in fiberboards made from delignified poplarwood. On the other hand, when paper sheets were made from lignin-free pulps and subsequently subjected to the usual heat treatment, their strength properties, folding endurance in particular, dropped markedly. This is ascribed to the degradation (i.e., lowered D.P.) of the cellulose. Heat treatment evidently causes loss of carbon dioxide, water, and acetic acid, with a lowering in the lignin and uronic anhydride contents. 6 tables, 7 figures, and 12 references. L.E.W.

BOARD SPECIALTIES

SLATER, LLOYD E. Here's a carry-home that pays its own way—plus. Food Eng. 24, no. 3: 40-1, 220 (March, 1952).

A case-size carry-home unit for merchandizing soft drinks has been developed by the Seven-Up Iowa Co. The 24-bottle "family pack" is made of fiberboard which has been found to withstand plant, truck, and store handling for as many as 50 round trips. The case is 5 lb. lighter than the wooden cases formerly used, has only half as large an initial cost, adds to the plant and warehouse storage capacity, and increases the capacity of delivery trucks. 5 illustrations. M.W.

CALCULATIONS

ZEYEN, ANDREAS. The determination of the length of paper in rolls. Allg. Papier-Rundschau no. 1: 18-20 (Jan. 12, 1952). [In German] *cf.* B.I.P.C. 22: 243.

Possible sources of errors in the formulas of the previous reference are pointed out, and a new formula is presented which is based on the net weight of the paper roll (i.e., minus the weight of the core) and the basis weight (g./sq.m.) of the running paper web. A table is included in which the calculated values of the lengths in meters of paper rolls weighing 100 kg. are given for paper webs 170-200 cm. wide and for basis weights of 30-50 g./sq.m. Several examples explain the application of this table. 1 table. E.S.

ZEYEN, ANDREAS. Practical calculations of the length of the paper web. Allg. Papier-Rundschau no. 3: 103-5 (Feb. 12, 1952). [In German] *cf.* preceding abstract.

Additional examples are given, in which the practical use of the table and certain variations of it are explained for the planning of an order, the placing of a contract order, the planning of the most favorable machine time, and the prediction of the termination of a job when paper in rolls is either manufactured or converted. 2 tables and 3 diagrams. E.S.

CARBON, ACTIVATED

CHEMICAL ENGINEERING. Carbon recovery from black ash. Chem. Eng. 59, no. 3: 206-9 (March, 1952).

The process at the Covington mill of the West Virginia Pulp and Paper Co. includes the recovery of carbon (leacher), which is leached from incinerated black liquor (black ash), and recausticizing of the green liquor from the black ash for re-use as cooking liquor. The leacher is converted to "Nuchar" activated carbon. Prominent in both the carbon recovery and recausticizing operations are Dorr CCD (countercurrent decantation) systems. 8 illustrations and 1 flowsheet. M.W.

DAVIES, R. G. The use of benzene adsorption isotherms in evaluating the surface and pore characteristics of activated carbons. Chemistry & Industry no. 8: 160-5 (Feb. 23, 1952).

A dynamic method and equipment for preparing adsorption isotherms for activated carbon with the use of benzene are described. The isotherms for the carbons tested are concave to the pressure axis up to a partial pressure of benzene vapor of about 21 mm.; the portions of isotherms above this pressure consist of hysteresis loops which extend to the saturation vapor pressure. The low-pressure portions may be attributed to monolayer adsorption and are useful in obtaining information about the surfaces of the carbons. The high-pressure portions, which are attributable to capillary condensation, provide insight into the pore-size distributions in the carbons. (It is apparent from the heats of adsorption that the adsorptive properties of a carbon are dependent not only on specific surface but also upon the size of the pores.) The pressure at which hysteresis begins appears to be constant from carbon to carbon, and the pore radius corresponding to this pressure is about four times the radius of the benzene molecule at 25°C. Decolorization tests indicated that the removal of color is best effected by carbons whose proportion of large pores is high. It is concluded that the type of activated carbon, with respect to pore size, depends chiefly on the raw material employed in its manufacture. 2 tables, 9 figures, and 15 references. M.W.

CELLOPHANE

LA CELLOPHANE. The manufacture of transparent cellulose films. Papetier 6, no. 2: 22-6 (February, 1952). [In French].

The manufacture of cellophane in the French factory at Mantes and the

different types of films (standard, waterproof, heat-sealing, fancy, insecticidal, and other grades) are described. 10 illustrations. E.S.

HIRSCH, P. The behaviour of membranes between electrolyte solutions. Parts I and II. Rec. trav. chim. 70, no. 7: 567-77 (July, 1951); 71, no. 3: 354-60 (March, 1952). [In English]

The electrochemical behavior of cellophane and oxidized cellophane membranes in contact with electrolyte solutions was studied. The difference between the membrane diffusion potential (I) and the liquid junction potential increased with the pH according to a curve which is similar to the dissociation curve of a monobasic acid, and therefore, a close correlation is indicated between (I) and the dissociation of acid groups (carboxyl) in the membrane substance. Tests with oxidized cellulose confirmed the dependence of (I) on the pH. 7 tables, 3 figures, and 20 footnotes. M.W.

CELLULOSE

MEREDITH, R. Cotton and cellulose—physics. Rev. Textile Progress 2: 7-15 (1950); *cf.* B.I.P.C. 21: 456.

Progress during 1949 and 1950 in the application of physical methods to the study of cotton and cellulose is reviewed. 35 references. M.W.

NEALE, S. M. Cotton and cellulose—chemistry. Rev. Textile Progress 2: 16-22 (1950); *cf.* B.I.P.C. 21: 456.

The developments during 1949-1950 in the study of the chemistry of cotton and cellulose fibers are reviewed. 53 references. M.W.

CELLULOSE—DEGRADATION

BLUM, ROBERT, and STAHL, WILLIAM H. Enzymic degradation of cellulose fibers. Textile Research J. 22, no. 3: 178-92 (March, 1952).

The effects of a cell-free, extracellular, cellulolytic enzyme solution on the properties of cotton, viscose rayon, and cuprammonium (Bemberg) rayon were studied. The early stage of degradation of the cotton fiber by the enzyme was characterized by a rapid loss of tensile strength. Changes in D.P. or degree of crystallinity were not discernible at any stage of the experiments. Microscopic observation of the swollen fibers revealed a gradual disappearance of the normal outer spiral winding and the appearance of spiral fissures which became more extensive and deeper with increasing incubation time. The initial rapid loss of tensile properties is attributed to rapid degradation along spiral planes, and a further loss to continuing attack on the exposed surfaces. Changes in the measured properties of enzyme-degraded viscose rayon were qualitatively similar to the changes of degraded cotton. Bemberg rayon was very rapidly and extensively degraded; within three days the tensile strength dropped to negligible values, the D.P. decreased to approximately 30% of its original value, and the degree of crystallinity increased. 23 figures and 22 references. M.W.

CELLULOSE—HEAT OF REACTION

MONGAR, I. L., and WASSERMANN, A. Heat effects accompanying the absorption of simple electrolytes by fully swollen alginate and cellulose gels. A new microcalorimetric method. J. Chem. Soc.: 510-13 (February, 1952).

A microcalorimetric method and the apparatus used are described; the procedure makes possible the determination of small heat effects which accompany the interaction of fully swollen gels with solutions of permanent electrolytes. The results of the measurements permit a comparison to be made between the heat of swelling of alginate or cellulose gels in water and the heat of swelling of the same gels in sodium or calcium chloride solution. The thermochemical reactions investigated represent typical examples which illustrate the kind of energetic conditions conducive either to salting out or salting in of colloids as brought about by the addition of simple electrolytes. 2 tables and 2 diagrams. E.S.

CELLULOSE—HEMICELLULOSE

ROUDIER, A. Protection of cellulose by the hemicelluloses in certain paper pulps. Bull. assoc. tech. ind. papetière 5, no. 7: 444-9 (November, 1951). [In French]

In the case of straw plup, oxalic acid (I) (0.225 g./l.) removes practically all arabinose units and a small quantity of xylose. By using (I) (2.25 g./l.) or 5 *N* sulfuric acid, the amount of xylose obtained increased greatly. When straw pulp or cotton linters were heated 12 hours with boiling 12% sodium hydroxide, the decrease in D.P. was far more marked in the linters than in the straw pulp, a finding which is accounted for by the assumption that the presence of xylan in the straw pulp protects the cellulose from the more extensive fission suffered by linters. When xylan is once removed from the straw pulp by sodium hydroxide, it is water soluble, whereas it cannot be extracted from the pulp with boiling water. Lignin apparently offers no protection, because the hydrolysis-time curve for xylan is practically the same, irrespective of whether this is removed from the original straw or the straw pulp. A paper chromatogram is included. 4 figures and 7 references. L.E.W.

CELLULOSE—HOLOCELLULOSE

RÅNBY, BENGT G. The physical characteristics of alpha-, beta-, and gamma-cellulose. Svensk Papperstidn. 55, no. 4: 115-24 (Feb. 29, 1952). [In English; German and Swedish summaries]

An electron-microscopic study of spruce holocellulose dispersed in water by means of ultrasonic waves indicates that it contains two different phases: micelle strands (cellulose) and a dispersed phase (hemicellulose). Further investigations of α-, β-, and γ-celluloses isolated from bleached, commercial, coniferous pulps have shown that the α-fraction is built up of micelle strands about 80 A. wide, whereas the γ-fraction contains no strands. The β-fraction is a mixture of short strand fragments and small particles. An x-ray investigation has proved that α- and β-celluloses have the same lattice, i.e., mercerized cellulose or cellulose II. The γ-celluloses from sulfite and sulfate pulps contain almost identical lattices which are, however, quite different from cellulose II. Two γ-fractions have been isolated, of which one may be a pure phase, whereas the other fraction is a mixture of this and at least one additional phase. If this interpretation is accepted, the β-cellulose of coniferous pulps is nothing but disordered and broken micelle strands and contains only depolymerized cellulose. This assumption is supported by the well-known fact that the β-fraction increases with different types of degradation of commercial wood pulps. Holocellulose and unbleached sulfate pulps have been reported to contain very small amounts of β-cellulose. The physicochemical data described in the present article strongly support the assumption that the cellulose strands in a spruce or pine pulp fiber form a pure phase with a definite boundary to the other carbohydrates. This assumption is in agreement with the hypothesis of Algar, Giertz, and Gustafsson (*cf.* B.I.P.C. 21:

768-9) that the γ-fraction is identical with the wood polyoses and with the amorphous interfibrillar substance of a pulp. The assumption of a pure cellulose phase is also supported by the fact that the amount of true cellulose which can be isolated by the different commercial cooking processes is fairly constant. 1 table, 24 figures, and 22 references. E.S.

CELLULOSE—OXYCELLULOSE

KOTHARI, C. B., and NABAR, G. M. Action of light on vat-dyed cellulose. J. Soc. Dyers Colourists 68, no. 2: 66-7 (February, 1952); *cf.* B.I.P.C. 7: 216.

An investigation of the effects on vat-dyed cellulose fabrics of prolonged exposure to light in the presence of oxygen is reported. The results obtained show evidence that a similar product is obtained when cellulose is (*a*) oxidized very rapidly by sodium hypochlorite under the accelerating influence of the leuco form of an active vat dye in the dark, or (*b*) oxidized by atmospheric oxygen more slowly by exposure to light in the presence of some active vat dye. This evidence supports the suggestion that the first effect of exposure to light of a dyeing of an active vat dye is to reduce the dye to its leuco compound, and that the subsequent oxidation of cellulose, either by air or by hypochlorite, follows the same course. 1 table and 6 references. M.W.

CELLULOSE ESTERS—NITROCELLULOSE

CHÉDIN, J., and TRIBOT, A. Different techniques used in nitrating cellulose. Bull. assoc. tech. ind. papetière 5, no. 7: 435-43 (November, 1951). [In French]

Although acetyl nitrate (I) prepared by the method of Chédin and Fénéant (*cf.* Compt. rend. 229: 115-17 [1949]) reacts very rapidly with liquid alcohols or pentaerythritol to form nitrates, its action on cellulose dried at 100°C. is almost negligible, which is in sharp contrast to the excellent penetration and nitration obtained with nitric acid, sulfuric acid, and water mixtures. Evidently, this sluggishness is not due to a lack of nitrating power of (I), but results from poor penetration of (I) into cellulose; this may be obviated by treating the cellulose successively with water, 95% alcohol, absolute alcohol, dry ethyl ether, acetone and, finally, carbon tetrachloride, followed by the addition of (I). Under such conditions effective nitration resulted at low temperatures and over long nitration periods, yielding a product containing 13.6-13.7% nitrogen. The percentage of nitrogen of partially nitrated cellulose could be raised to approximately 14% with mixtures of 80 or 90 moles of acetic anhydride and 20 or 10 moles of nitric acid. Infrared spectrograms (not given in the article) of pretreated cellulose, dried by solvent dehydration, show the presence of frequent, free (undissociated) hydroxyl groups. 1 table, 3 figures, and 8 references. L.E.W.

NICHOLAS, L. Influence of the method of nitrating cellulose on the DP of nitrocellulose. Bull. assoc. tech. ind. papetière 5, no. 7: 427-35 (November, 1951). [In French]

Using various nitrating baths and two grades of cotton linters, the author determined the viscosity (I) of the resulting cellulose nitrates in butyl acetate (II). The lowest values for (I) were obtained when a mixture of 50% nitric acid, 25% acetic acid, and 25% acetic anhydride was used in the nitration, whereas the highest (I) were obtained with 50% phosphoric acid, 2% phosphorus pentoxide, and 48% nitric acid. In all cases (I) was corrected to a nitrogen content of 13.8%. Assuming a Staudinger constant for nitrocellulose in acetone of 10.5×10^{-3}, K in (II) was calculated as 13.8×10^{-3}. Com-

parative studies were also made between the (I) of nitrocelluloses in (II) with the (I) in cupriethylenediamine (III) of the original linters. The constant $(K) = 7.5 \times 10^{-4}$ for cellulose in (III) adopted by the Conference Periodique de la Cellulose appears to give D.P. values which are too low; tentatively and with reservation, the author suggests the constant 6.1×10^{-4} for cotton cellulose in (III). 4 tables, 5 diagrams, and 11 references.
L.E.W.

CELLULOSE ETHERS

AKKERMAN, F., PALS, D. T. F., and HERMANS, J. J. Non-Newtonian flow of dilute polymer solutions. III. Sodium carboxy methyl cellulose in solutions of sodium chloride. Rec. trav. chim. 71, no. 1: 56-63 (January, 1952). [In English] *cf.* B.I.P.C. 13: 185-6.

A direct method is used to derive the influence of the shearing stress on the intrinsic viscosity from the experimental data without introducing empirical or semiempirical relations. It is shown that the method of plotting $(t - t_0)/t_0c$, where t is the time of flow and c the concentration, is in error. The application to carboxymethylcellulose in dilute salt solutions reveals a pronounced effect of small shear rates on the intrinsic viscosity. On comparison with existing hydrodynamic theories it is found that even the fully extended length of the polymer molecule would be too small to explain the results. 3 figures and 9 footnotes. M.W.

BASU, SADHAN, and DAS GUPTA, PARES CH. Studies on polyelectrolytes. I. Sodium carboxymethylcellulose. J. Colloid Sci. 7, no. 1: 53-70 (February, 1952).

Interest in the sodium salt of carboxymethylcellulose as a substitute for natural gums prompted this study of its physicochemical properties. Viscosity, pH effect, salt effect, and conductivity were measured, and the data indicate that sodium carboxymethylcellulose is a polyelectrolyte with characteristics different from either neutral polymers or strong electrolytes. A critical discussion shows that all the experimental results can be explained only by the folding-chain theory of viscous behavior of a colloidal system. 7 tables, 5 figures, and 21 references. M.W.

GIBBONS, G. C. The homogeneous acid hydrolysis of methyl cellulose. Part I. Determination of reaction rate by reducing group measurements. J. Textile Inst. 43, no. 2: T25-37 (February, 1952).

The homogeneous hydrolysis of methylcellulose in dilute hydrochloric acid was followed by means of the change in end-group concentration which was measured by hypoiodate oxidation of the aldehyde groups. The reaction, which follows a unimolecular course in its early stages, was found to be a hydrogen-ion catalysis with an Arrhenius activation energy of 30,150 calories. The catalysis is of the type in which the reaction rate is determined by the decomposition of an intermediate complex formed by the transfer of a proton to a molecule of the cellulose ether prior to hydrolysis. There is an increase in specific reaction rate when the degree of degradation is large, resulting from the greater rate of hydrolysis of terminal glucose units; the methoxyl content also influences the reaction rate. In addition to those involved in 1 : 4 glucosidic bonds, there are a few combined aldehyde groups which are liberated very much more rapidly in acid solution; however, these weak bonds are not main chain bonds. 7 tables, 7 figures, and 34 references. M.W.

GIBBONS, G. C. The homogeneous acid hydrolysis of methyl cellulose. Part II. The change of viscosity and molecular weight dur-

ing hydrolysis. J. Textile Inst. 43, no. 2: T38-52 (February, 1952).

Curves which relate intrinsic viscosity and time of hydrolysis have been obtained for various fractionated and unfractionated methylcelluloses in 1.19 *N* hydrochloric acid solution and compared with the predictions of a theory of random degradation of chain molecules. Almost quantitative agreement was obtained in the case of fractions from homogeneously methylated cellulose, if the weight-average D.P. is assumed to be equal to 1170 times the intrinsic viscosity (liters/g.) and the rate of hydrolysis to be that of 4,β-glucosidic bonds when determined by an end-group method. The hydrolysis is therefore random, and the viscosity decrease is due solely to the scission of 4,β-glucosidic bonds. It was also found that the intrinsic viscosity decreases more rapidly for an unfractionated methylcellulose than for a relatively uniform fraction of the same average D.P. This result is predicted by the theory, and the difference in rate of decrease of viscosity may be calculated from the observed distribution curve of the nonuniform methylcelulose. Differences between the data for fractions derived from commercial methylcelluloses and those from methylcelluloses prepared by homogeneous methylation are attributed to a nonrandom distribution of methoxyl groups along the commercial methylcellulose chain molecules which results in initial preferential hydrolysis at the chain centers. 10 tables, 5 figures, and 27 references.
M.W.

CHEMICAL TESTING—BLACK LIQUOR

SUTAONE, G. G. Analysis of sulphate black liquor; a rapid method for the determination of carbon and sulphur. Pulp Paper Mag. Can. 53, no. 3: 171-4 (Convention, 1952).

The Parr peroxide bomb has been found to be useful for the rapid determination of the total carbon and total sulfur in sulfate black liquor, if the modified procedure for ignition and fusion as recommended in the article is followed. The dried black liquor sample is fused with sodium peroxide whereby all the carbon is converted to sodium carbonate and the sulfur to sodium sulfate. The fused mass is dissolved in distilled water. The carbon is determined as sodium carbonate by potentiometric titration with hydrochloric acid, using a pH meter, and the sulfur is determined by the standard gravimetric method as barium sulfate. The accuracy of the method has been checked by determining carbon in pure sucrose, and both carbon and sulfur in pure sulfosalicylic acid. The method has been shown to be sufficiently accurate and reproducible for routine control and mill investigation work. 2 figures and 5 references.
E.S.

CHEMICAL TESTING—PULP—ACID NUMBER

SIHTOLA, HANNES, and PUUSTJÄRVI, VILJO. On the acidic character of cellulose. 1. Suomen Kemistilehti (B) 24: 36-43 (1951). [In English]

A preliminary investigation on the acidic properties of cellulose by potentiometric titration is reported. Both rapid and slow titration methods were used. The curves obtained are similar on the acid side but, above pH 7, the curve rises more sharply with the rapid method than with the slow method. The length of time required to reach equilibrium or the influence of possible secondary reactions (Cannizzaro reaction, opening of lactone rings, etc.) may contribute to this difference. The titration curves contain a buffered lower part which corresponds to the actual acidity of cellulose and, in the slow titration, a heavily buffered area over pH 7 which may be caused in part by secondary reactions during the titrations. This is supported by the fact that a complete alkali-acid titration gives some kind of a hysteresis curve in which

the branch which represents the acid titration is underneath. A cation exchange carried out with dilute hydrochloric acid is not in any way complete. The cations are exchanged for hydrogen ions much more completely by electrodialysis and, thus, the pH of the pulp suspension becomes considerably lower. In addition, the same initial pH is obtained by electrodialysis, irrespective of whether the pulp is treated with acid or alkali or untreated before the electrodialysis. 6 figures and 9 references. M.W.

CHEMICAL TESTING—PULP—COPPER NUMBER

PELGROMS, J. D., and VILLERS, L. Improvement in the method for determining the copper number of pulps. Papeterie 74, no. 2: 87, 89, 91 (February, 1952). [In French]

A slight modification of the Wenzl procedure appears to give more reproducible results. To a 150-ml. Northrup or Lintner flask (which can be sealed with a screw clamp) are added 2.5 g. of air-dried, shredded pulp and 50 ml. of the usual standard cupric sulfate solution previously heated to boiling. The flask is sealed, placed immediately in a boiling water bath, and kept there for exactly 0.5 hour. The contents are then promptly poured into cold water, filtered by suction, washed, and treated gradually with 100 ml. of a standard ferrous sulfate solution, filtered, and washed; the ferrous sulfate in the solution is titrated with 0.1 *N* potassium permanganate. The agreement of the data obtained with the Wenzl procedure and the modification of the authors for bleached and unbleached sulfite and groundwood pulps is shown in a table. 1 table and 2 figures. L.E.W.

CHEMICAL TESTING—PULP—CUPRAMMONIUM VISCOSITY

RUTISHAUSER, M., and WEBER, A. A rapid method for determining the cuprammonium viscosity. Svensk Papperstidn. 55, no. 3; 67-71 (Feb. 15, 1952). [In German]

Preliminary experiments with ultrasonic waves for accelerating the rate of dissolution of cellulose in cuprammonium hydroxide had to be abandoned because degradation of the D.P. resulted. The influence of different commercial wetting agents upon the process was then investigated; Invadin JFC (Ciba) (I) was found most suitable. By the addition of two drops each of (I) and pyrogallol to a 50% solution in a TAPPI viscometer tube, the period required for dissolving the usual cellulose qualities could be reduced to 5-10 minutes. By standardizing the fundamental operations involved in an accurate determination, reproducible values may be obtained within 40-50 minutes with the new method. A diagram is included which permits the conversion of the data obtained with the above modification to TAPPI viscosity values. The similarity of the data by Lindsley (*cf.* B.I.P.C. 21: 690-1) obtained with cupriethylenediamine solutions and wetting agents (about which the present authors heard after conclusion of their own work) is mentioned. 4 tables, 8 figures, and 16 references. E.S.

CHEMICAL TESTING—PULP—CUPRIETHYLENE VISCOSITY

WILSON, KARIN. A tentative method for determination of viscosity of cellulose dissolved in cupriethylenediamine; report of work done by the Analytical Committee of the Central Laboratory of the Cellulose Industry (CCA). Svensk Papperstidn. 55, no. 4: 125-33 (Feb. 29, 1952). [In English and (partly) Swedish; German and Swedish summaries]

A method for the determination of the viscosity of pulp in cupriethylenediamine has been developed which is published by the Committee for sug-

gestions and criticisms prior to adoption as a Swedish standard. The pulp is first defibrated in 25 ml. of water in a 50-ml. bottle, together with some pieces of copper and is then dissolved by adding 25 ml. of 0.1 *M* cupriethylenediamine and shaking for 15 minutes. The viscosity determination is made in a Wagner-Russel viscometer at a velocity gradient of 200 $sec.^{-1}$ or in an ordinary pipet viscometer when the viscosity value is recalculated to a velocity gradient of 200 $sec.^{-1}$ with the aid of a curve. The procedures and apparatus are outlined in considerable detail. 8 figures and 10 references. E.S.

CHEMICALS

ELECTRIC REDUCTION COMPANY OF CANADA LTD. Chemicals by electric oxidation. Can. Chem. Processing 36, no. 2: 36-7 (February, 1952).

Expansion of facilities for the manufacture of sodium chlorate is under way as a result of an increased demand for this chemical by several industries. One of its new uses is in the bleaching of pulp by chlorine dioxide which produces a higher brightness, strength, and α-cellulose content than is obtained with hypochlorite bleaching. The manufacture of sodium chlorate is essentially the electrolysis of a sodium chloride solution which is acidified with hydrochloric acid. 3 illustrations and 1 flowsheet. M.W.

CHROMIUM PLATING

BELVIN, CHARLES H. Chromium plating reduces roll maintenance. Fibre Containers 37, no. 3: 65-6, 68-70 (March, 1952); Southern Pulp Paper Manuf. 15, no. 4: 48, 50, 52, 54, 56 (April, 1952).

Electroplating as a practical maintenance tool for rolls, drums, and other working surfaces in contact with the paper or board sheet is discussed under the subheadings: preventive maintenance, recovery maintenance, and continuity maintenance. Plating applications on calender, wire-return, corrugating, and size press rolls, Vortraps, and screen plates are listed as examples. 3 illustrations. E.S.

CLAY

KOTTE [HANS] Kaolin as filler and coating agent. Allg. Papier-Rundschau no. 4: 150-2 (Feb. 25, 1952). [In German]

The article is based on the book "Kaolin clays and their industrial uses," published by the J. M. Huber Corp., New York. 3 tables and 8 illustrations. E.S.

COLOR

GRANVILLE, WALTER C. Color control in printing; a discussion of the factors involved. Am. Printer 133, no. 3: 24-5, 58, 60, 63, 66, 68 (March, 1952).

With respect to ink itself, its color and thickness are two measurable factors which determine the appearance of a printed piece. Other factors which can also affect the results are differences in the source of illumination under which it is viewed and differences in the paper stock on which it is printed. Instruments for color control are of two general types, spectrophotometers and colorimeters; filter photometers are used for measuring relative ink film thickness. Standardized color chips, such as those contained in the "Color harmony manual" of Container Corporation of America, are also finding increasing use for color control. The application of these devices is described, and their advantages and limitations are discussed. 1 table and 3 figures. M.W.

MODERN PACKAGING. Color control. Modern Packaging 25, no. 7: 189-93 (March, 1952).

The various steps in an outline of procedure for a color-control program in packaging are enumerated and discussed. The designer's responsibility in selecting colors which are easily controlled and do not involve expensive pigments and which are suitable for the packaging material is a primary factor. The suitability of the ink to the use of the printed material, the type of equipment available for the printing job, and the characteristics of the packaging materials must also be considered. After these factors are known, the ink may be formulated and color specifications established; color-analysis instruments provide an effective means of maintaining specifications. Color systems and guide charts are helpful in developing color-control programs. 6 figures. M.W.

COLORIMETRY

DAVIDSON, H. R. Calculation of color differences from visual sensitivity ellipsoids. J. Optical Soc. Am. 41, no. 12: 1052-6 (December, 1951).

All color-difference equations are based, either explicitly or implicitly, on the measurement of the distance between the two colors when plotted in a visually uniform color space. The accuracy of these equations depends upon the approximation assumed in their derivation and the uniformity of the color space chosen. Judd's uniform chromaticity space, Adam's chromatic value space, the Munsell space, and others have been used as the basis of color-difference equations. Instead of explicitly transforming the I.C.I. space into a visually uniform space, its known distortions can be compensated by means of the MacAdam ellipsoids. Color differences may be calculated very simply by a graphical method, assuming any point on the ellipsoid to represent a unit color difference from the center of the ellipsoid. Calculations of this sort have been applied to the Balinkin data on tiles and to data more recently obtained on textile dyeings. Color differences calculated by this method correlate with visually estimated color differences as closely as do differences calculated by the best of the equations based upon uniform color spaces. This appears to be a further confirmation of the MacAdam ellipsoids and of their usefulness in the specification of color tolerances. 4 tables, 7 figures, and 13 references. E.S.

REESE, W. B. Practical color matching. Rayon and Synthetic Textiles 33, no. 3: 31-2, 78 (March, 1952).

Recent progress in the development of better equipment and instruments for color matching is outlined, and their application to visual color evaluation and color control is described. 3 figures. M.W.

CONTAINER INDUSTRY

OBRECHT, G. The French boxmaking industry. Rev. papiers et cartons 15, no. 1: 5-8 (Jan. 1, 1952). [In French]

In the form of an interview, the president of the French association of boxmakers discusses the domestic industry, including types of boxes made, output in 1950, number and distribution of establishments, number of workers employed, and future prospects, including exports. 1 table. E.S.

CONTROLLED MATERIALS PLAN (CMP)

RUSSELL, MERRILL. The Controlled Materials Plan. Southern

Pulp Paper Manuf. 15, no. 3: 78, 80-1 (March, 1952); Paper Mill News 75, no. 8: 110 (Feb. 23, 1952).

The author describes the Controlled Materials Plan under which the distribution of steel, copper, and aluminum is supervised by the National Production Authority, and industrial consumption is restricted in favor of defense needs. The effects of this program on the pulp and paper industry are summarized, and means are suggested for minimizing the difficulties which the controls impose on individual manufacturers. M.W.

COOKING PROCESS

BROUNSTEIN, C. J. A review of lesser-known pulping methods. Pulp Paper Mag. Can. 53, no. 3: 247-58, 263 (Convention, 1952).

This review covers acidic (sulfite cooking, including prehydrolysis; nitric acid pulping; cooking with alcohols, phenols, and dioxane; and cooking with organic acids), alkaline, and neutral systems (neutral sulfite, other neutral salts, and neutral alcohols), and those which involve halogen compounds (chlorine, chlorine dioxide, and sodium chlorite). 22 tables and 106 references. E.S.

KASSER, ALEXANDER. Modern industrial production of paper pulp from straw and bagasse. Papeterie 74, no. 1: 2-3, 5, 7, 9, 11 (January, 1952). [In French]

Brief descriptions are given of the delignification by means of chlorine and the soda, kraft, and neutral sulfite processes. McKee's method for cooking with sodium xylenesulfonate (*cf.* B.I.P.C. 17: 283) is mentioned. L.E.W.

CORROSION

CONNOR, G. R., and HANLON, R. T. Corrosion control in boiler plants of pulp and paper mills. Pulp Paper Mag. Can. 53, no. 2: 65-70 (February, 1952).

Much progress has been made in the control of corrosion in feed and condensate-return systems of pulp- and paper-manufacturing operations. As a result of these developments, it is possible to prescribe a water-treatment system which will provide total conditioning for the feedwater, steam generating, and condensate-return cycle. The design and function of water-conditioning equipment which is used in various ion-exchange processes are described, and chemical treatments for prevention of corrosion of condensate-return systems are discussed. In conclusion, reference is made to the considerations which are involved in the selection of a treatment system. 5 figures and 8 references. M.W.

DECULATOR PROCESS

SMITH, J. A. Application of Deculator to Fourdrinier paper machines. Pulp Paper Mag. Can. 53, no. 3: 160-2 (Convention, 1952); Paper Trade J. 134, no. 12: 22, 24, 26 (March 21, 1952).

Results obtained to date from existing Deculator installations indicate that air-free stock will behave differently in the headbox and on the wire from undeaerated stock. In general, there will be no foam, less slime, and fewer lumps and flocs in the headbox, and a higher wet strength on the wire with higher couch vacuums. A smoother and less porous finished sheet will be made. On newsprint machines it is reasonable to expect that, at the same machine speed, a reduction can be made in the percentage of sulfite without

increasing the number of wet-end breaks, or that, alternately, the machine can be speeded up at the same percentage of sulfite. The degree of improvement on any machine will depend on the specific machine and its limitations. 1 reference. E.S.

DIGESTERS

McALEAR, JAMES M. Masoneilan digester control system. Paper Mill News 75, no. 12: 89 (March 22, 1952).

A time flow-program controller which admits a given quantity of steam or B.t.u. value over a given period of time is used to govern steam flow to a direct-cook digester which has natural circulation. A separate pressure controller in series with the cam-operated flow controller insures that the same maximum digester pressure is obtained on each cook. The digester relief control system, which is secondary in importance to the steam-admission control system, consists of a temperature and pressure relation controller, which actuates a control valve in the gas relief line and is interlocked with a suitable automatic blowback system for steam cleaning the relief strainer. 1 illustration. M.W.

DRYING—PAPER

HIGGINS, JAMES J. The air drying of paper. Tappi 35, no. 3: 93-9 (March, 1952).

Although air drying of paper represents only a small part of the drying carried out by the industry, it is believed to be the most fundamental and, therefore, has been studied as a basis for the determination of the mechanism of drying on hot surfaces. The results show that the paper sheet does not dry at a uniform rate from the leading to the trailing edge. Freeness (from 470 to 800-ml. Schopper-Riegler), formation, and the number of plies have no effect on the rate of drying during the constant-rate period. The moisture distribution within the sheet was also studied; this varied slightly with the initial moisture content and appears to be independent of the freeness of the sheet and the rate of drying between 100 and 25% moisture. A mechanism for the flow of moisture during drying is proposed. 2 tables, 13 figures, and 14 references. E.S.

DYES AND DYEING

TURNER, H. A. Dyeing. Rev. Textile Progress 2: 264-301 (1950).

This general review of the literature on textile dyeing for 1949 and 1950 includes sections on the dyeing properties of cellulose, light fastness and associated photochemistry, and colorimetry and allied optical methods. 236 references. E.S.

ENGINEERING

POUND, W. T. The role of engineering in the pulp and paper industry. Pulp Paper Mag. Can. 53, no. 2: 56-60 (February, 1952).

The pulp and paper industry is the largest industry in Canada, and as it continues to expand, an increasing number of trained technical men will be required. The paper field offers ample opportunities to engineers in the fields of structural design, hydraulics, thermodynamics, specialized papermaking equipment, water purification, road building, maintenance, production, control and development, and forestry. 3 figures. M.W.

UNION BAG & PAPER CORPORATION. Engineering at U. B. Pulp & Paper 26, no. 3: 40-2 (March, 1952).

The organization and functioning of the engineering staff at Union Bag are described. 3 figures. M.W.

EVAPORATION AND EVAPORATORS—SULFITE WASTE LIQUOR

SCHOLANDER, AXEL. The rate of dissolution of calcium sulfate. Svensk Papperstidn. 55, no. 3: 90-100 (Feb. 15, 1952). [In Swedish; English summary]

This is a fundamental study of the solubility of the incrusting substances formed during the evaporation of spent sulfite liquors. The dissolution of calcium sulfate dihydrate was studied experimentally by using cylinders of this material (according to the method developed by Fedorov, *cf.* C.A. 25: 3905-6 [1931]), rotating in different mediums (water, glucose solutions, sodium chloride, dichloroacetic acid, sulfur dioxide-water mixtures, and hydrochloric and nitric acids). The dependence of the rate of dissolution (I) upon temperature, viscosity, velocity of flow, ionic strength, and pH of the medium was investigated. The reaction was found to be governed by diffusion, and (I) was primarily dependent upon the viscosity and flow of the solvent. Some experiments were also made with anhydrite. The results are discussed with reference to the optimum conditions for dissolving the calcium sulfate in evaporator units, particularly in the Ramén and Rosenblad systems. The solubility of the dihydrate and anhydrite in sulfur dioxide-water mixtures, hydrochloric acid, and nitric acid was determined; the highest results were obtained with nitric acid at a concentration of 23%. 12 tables, 15 figures, and 18 references. E.S.

FEED WATER

NORRIS, THOS. H. The filtration of boiler feed-water using diatomaceous earth. Pulp Paper Mag. Can. 53, no. 3: 187-93, 198 (Convention, 1952).

The construction and operation of the diatomaceous-earth, pressure-leaf-type filter at Iroquois Falls (which consists of Davis Clearflow filters) for oil removal from condensate and clarification of boiler makeup water are described. Miscellaneous uses of this filter and diatomaceous earth in other industries are listed. 2 tables and 6 figures. E.S.

FERMENTATION PROCESS

STRANKS, D. W. Microbiological degradation of lignocellulose material. Pulp Paper Mag. Can. 53, no. 3: 220-4 (Convention, 1952).

Following a review of the fundamental research on the utilization of wood waste by fermentation, reference is made to studies with rumen micro-organisms in progress at the Ottawa Laboratory of the Forest Products Laboratories Division in Canada. The possibilities of an industrial process of wood-waste utilization by fermentation with rumen bacteria are mentioned; if this should not be economically feasible, wood waste as cattle fodder may provide another answer to the problem. 16 references. E.S.

FIBER—STRUCTURE

HERMANS, P. H., and HEIKENS, D. Orientation in cellulose fibers as derived from measurements of dichroism of dyed fibers. Rec. trav. chim. 71, no. 1: 49-55 (January, 1952). [In English]

From accurate measurements of dichroism on dyed model filaments by photoelectric and visual methods, a measure of the over-all orientation of the dyestuff molecules in the fiber is derived and compared with the over-all orientation of the fiber substance as derived from x-ray and optical measurements. The results are discussed in connection with similar measurements on rayon fibers. 2 tables, 1 figure, and 7 references. M.W.

FIBERS

CALLOW, H. J. Bast fibres—physics and chemistry. Rev. Textile Progress 2: 23-37 (1950); *cf.* B.I.P.C. 21: 466.

Research on the morphological and fine structure of bast fibers and their chemical composition (hemicelluloses, lignin, and the association of the fiber components), and the relation between chemical composition and fiber properties for the years 1949 and 1950 are reviewed. In conclusion, reference is made to other vegetable fibers, particularly those which might be used as a substitute for jute. 67 references. E.S.

FINISHING ROOM

IMMONEN, BJÖRN. Economical checking for paper defects. Allg. Papier-Rundschau no. 1: 10-16 (Jan. 12, 1952). [In German] *cf.* B.I.P.C. 21: 238-9.

This is a complete translation of the Swedish article. E.S.

FIRE PREVENTION

U. S. NATIONAL BUREAU OF STANDARDS. *Fire Protection Section.* Ignition of fibrous materials by self-heating. J. Franklin Inst. 253, no. 3: 259-60 (March, 1952).

Recent studies have provided conclusive proof that closely packed fibrous materials can ignite by self-heating. These materials, in quantity and after standing for some time, may develop an internal temperature higher than the surrounding one; the extent of this temperature rise will depend upon the material, its density and packing, the ambient temperature, and the length of time this state is maintained. The larger the volume of the specimen, the greater is the self-heating temperature rise within the specimen for a given ambient temperature, and the lower is the external temperature required to initiate combustion. Ignition was found to start at the geometrical center of the specimen and spread outward through the remainder of the material. The time required by different types of cellulosic materials to reach ignition varies widely. When the ambient temperature is allowed to rise with the self-heating of the specimen rather than being held constant, ignition is accelerated. Extremely large volumes of fibrous materials will ignite at relatively low ambient temperatures, so that a potential fire hazard exists in the transportation and storage of these materials, particularly after hot processing and drying. More effective control of shipping and storing temperature and of stack size is recommended. E.S.

FLUID DYNAMICS

ERGUN, SABRI. Fluid flow through packed columns. Chem. Eng. Progress 48, no. 2: 89-94 (February, 1952).

From the existing information on the flow of fluids through beds of granular solids, it is shown that pressure losses are caused by simultaneous kinetic and viscous energy losses. A single, comprehensive equation which is applicable to all types of flow is developed and examined with regard to its dependence upon flow rate, properties of the fluids, and fractional void volume, orientation, size, shape, and surface of the granular solids. A linear equation is shown to represent the conventional type of friction factor, and a new form of friction factor is given which represents the ratio of pressure drop to the viscous energy term and which should have advantages over the conventional type. 9 figures and 27 references. M.W.

RUSHTON, J. H. Applications of fluid mechanics and similitude to scale-up problems. Parts 1 and 2. Chem. Eng. Progress 48, no. 1: 33-8; no. 2: 95-9; discussion: 99-102 (January, February, 1952).

A brief review of the principles of dynamic similitude is given. Basic concepts of fluid mechanics are used to develop relations between fluid motion, equipment size, and fluid properties that may apply to chemical engineering work. A general method is given whereby the requirements for dynamic similitude for any fluid system can be determined. Examples are provided which show how these principles can be used in pilot-plant models to obtain scale-up data for operations which involve resistance to fluid flow, discharge of liquids from tanks, blending of liquids by a mixer, control of forced vortexes, dissolving of solids during mixing, and absorption and desorption of gases in moving liquids. Suggestions are made for applying the principles to any type of operation which involves mass transfer in a liquid, and to other flow operations such as fluidized systems and suspensions. 2 tables, 4 figures, and 21 references. M.W.

FLY ASH

COBBS, WALTER H., JR. Using powdered-coal flyash. Power 95, no. 5: 87-9 (May, 1951); Tappi 35, no. 3: 143-5A (March, 1952).

A bibliography of uses of fly ash formed from burning pulverized coal is presented; the literature up to May 1, 1950 has been considered. 71 references. E.S.

FORESTS AND FORESTRY

BENNETT, W. D. Our forest heritage. Pulp Paper Mag. Can. 53, no. 2: 86, 88, 90, 92 (February, 1952).

The value to the Canadian economy of forests and forest industries is discussed, and the importance of co-operation between the government and industry in establishing effective forest management policies is stressed. M.W.

BESLEY, LOWELL. Viewpoints on forest tenure. Pulp Paper Mag. Can. 53, no. 3: 312-13, 316, 318, 321-2 (Convention, 1952).

A permanent tenure of forest land is basic to maximum sustained yield management of forests. In British Columbia, where 93% of the forest area is government-owned, forest management presents a special problem. However, a review of forest land ownership development in Europe and the United States does not indicate that private ownership of forests will always result in better forest practices than those found under public ownership in these countries. Rather the answer seems to lie in the granting of management licenses of all sizes without linking specific forest areas with specific manufacturing facilities. Under such a scheme there could be an open log market even if all forest lands of the province were divided into management licenses. M.W.

DALY, E. G. Improvement cutting in a mixedwood stand. Pulp Paper Mag. Can. 53, no. 2: 81-2 (February, 1952).

Four permanent sample plots were established in 1926 at the Petawawa Forest Experiment Station in the white birch/aspen-balsam/spruce/pine cover type to investigate the effect of an improvement cutting on the growth and yield of the residual stand. On two plots most of the over-topping hardwoods were removed, and the denser patches of conifers were thinned to

improve spacing; in general, the treatment was conducted to favor the coniferous content of the stand. Two plots were left in the natural condition as controls. The diameter increment of the 100 largest spruce and balsam on the treated plots in the 19-year period after treatment was approximately 50% greater than for comparable trees on the controls. The net-volume increment of all species on the treated plots was 3-4 times higher than the controls. 1 table. M.W.

DIRECTOR OF FORESTRY, *Union of South Africa.* Forest research in South Africa. Indian Pulp and Paper 6, no. 6: 276-9 (December, 1951).

A report of the research activities of the Forest Products Institute of South Africa is presented. Studies on timber preservation, seasoning, utilization, and mechanics, investigations into thinning and pruning techniques of coniferous stands, and genetic and hydrological researches have been carried out. M.W.

DUTILLOY, PIERRE. The future of the French production of coniferous pulpwood. Rev. papiers et cartons 15, no. 3: 77-9, 81-4 (Feb. 1, 1952). [In French]

The present status of the French coniferous forests and the need for definite forest policies are outlined. E.S.

LIEFELD, T. A. Thinning for pulpwood. Am. Forests 58, no. 3: 28, 51 (March, 1952).

The basic objective in thinning of young stands is to permit the trees to make rapid growth, and yet to limit the space between trees so that they do not become bushy and limby. Although there are no set rules, the spacing of crowns is the important factor in successful thinning. 1 illustration. M.W.

GAS TURBINES

WILSON, W. B., and BLOOMQUIST, W. C. Combustion gas turbine applications in the paper mill. Tappi 35, no. 3: 81-7 (March, 1952).

The gas turbine can produce substantially more by-product power than the process steam turbine in most applications. It is a simple, self-contained prime mover consisting of a compressor, combustion equipment for burning the fuel, and the turbine. The units are available in three different types which are described briefly. A summary is also given of some of the ways these gas-turbine units can be applied to supply mill requirements for steam and electric power. When required, steam flow from the exhaust-heat recovery boilers can be increased by supplementary fuel firing. Therefore, the gas turbine can be applied where the ratio of electric power to process steam is higher than the upper limit of the noncondensing steam plant but lower than the gas turbine operating with exhaust-heat recovery boilers alone. From available data it is estimated that the cost of a new gas-turbine plant is approximately 75% of that of a comparable steam plant. 19 figures. E.S.

HEATING (INFRARED)

CHAMPLAIN COMPANY, INC., *Bloomfield, N.J.* New Champlain ink dryer uses electric heat for rapid drying. Am. Paper Converter 26, no. 3: 22, 24 (March, 1952).

The construction and operation of an electrically heated ink drier which can produce temperatures ranging from 70 to 800°F. is described. It is designed to deliver the maximum amount of safe effective heat concentrated on the smallest possible area; in this way the unit is reduced to a minimum length and web speeds can be increased. It may be used for paper, board, cellophane, polyethylene, laminated sheets, metal sheets, etc. 4 figures.
M.W.

WESTBROOK, FRANCIS A. Infra-red heat speed label production. Paper & Print 25, no. 1: 112 (Spring, 1952).

A printing concern in St. Louis, Mo., has installed a Fostoria Evenray infrared heating system for the rapid drying of spirit varnish on paper labels for food cans. The drying takes place in three seconds and provides a finer gloss than was formerly obtained, because the rapid drying does not permit the varnish to soak into the paper. 1 illustration. M.W.

HISTORY

ANON. The paper industry from its origin to the present; papermakers of olden times. Papetier 4, no. 8: 11-13; no. 9: 51, 53, 55, 57, 59; no. 10: 33, 35, 37, 39, 41, 43; no. 11: 41, 43, 45, 47, 49; no. 12: 25-9 (August-December, 1950); 5, no. 1: 47-9, 51-3; no. 2: 37-40; no. 3: 25, 27, 29, 31; no. 4: 29, 31, 33, 35, 37; no. 5: 39, 41, 43, 45, 47; no. 6: 49, 51, 53-4; no. 7: 27, 29-32; no. 8: 19, 21-3; no. 9: 33, 35, 37, 39, 41; no. 10: 37, 39, 41, 43; no. 11: 73, 75, 77 (January-November, 1951). [In French] *cf.* B.I.P.C. 21: 16.

In a series of historical articles the following subjects are discussed briefly: plain and decorated papers used in daily life around 1750 (August, 1950); the goods sold by a paper merchant before the French Revolution (September-November, 1950); the goods sold by a paper merchant in the period from 1800 to 1880 (December, 1950-April, 1951); the tools of the writer (ink, inkstands, pen nibs, and pencils) (May-July, 1951); special papers (flock paper, wall paper decorated with silhouettes, and patriotic paper) (August, 1951); sealing wax and sealing wafers (September, 1951); the first duplicating machines (October, 1951); and portfolios, small kits, papeteries, and letter paper (December, 1951). E.S.

REILLY, DESMOND. Early papermaking in Canada. Paper Maker [U. S.] 21, no. 1: 13-21 (1952).

The early mills and the personalities involved in the beginning of the important Canadian paper industry are described. 13 illustrations. M.W.

H-ION CONCENTRATION

PONS, WALTER A., JR., and HOFFPAUIR, CARROLL L. Colorimetric determination of the pH of cotton fiber. Textile Research J. 22, no. 3: 200-2 (March, 1952).

A colorimetric method for the determination of the pH of cotton fiber is described. The method involves the direct application of neutralized sulfonphthalein indicators, dissolved in 25% isopropyl alcohol, to the fiber. The pH is determined by reference to color standards prepared from buffered cottons which contain the same relative amounts of cotton and indicator solution. The pH values obtained for 85 samples of cotton fiber by the colorimetric method and by an electrometric method were statistically ana-

lyzed to establish the precision of the method. A correlation coefficient of 0.96 and a standard deviation of differences of 0.17 pH unit were obtained. The accuracy of the method also appears to be very good. 1 table and 9 references. M.W.

ZARNCKE, WILHELM. pH control and paper. Allg. Papier-Rundschau no. 4: 155-6 (Feb. 25, 1952). [In German]

The author explains the value of pH control for different procedures in pulp and paper manufacture, with particular reference to the use of the new Merck pH-indicator papers which can also be employed in those cases where electrometric measurements fail. 7 references. E.S.

INTEGRATED FOREST UTILIZATION

FENSOM, K. G. Integrated wood utilization and its relation to forest management. Pulp Paper Mag. Can. 53, no. 3: 302, 305-6, 309-10 (Convention, 1952).

Integrated wood utilization must be achieved through careful planning. The present system of integration which is being practiced in some areas of British Columbia is described, and the results of surveys on logging wastes which have been conducted in other areas are summarized. On the basis of these findings, it is shown that the variables of species, size, equipment, quality, marketability, accessibility, exploitation, character of limit, and the demands of forest management must be considered in a plan for integrated utilization and, although highly desirable in some areas, such a plan would not necessarily be economically sound in all forest areas. 2 tables. M.W.

INVENTORIES

ANON. A card index system for purchasing and inventory control of papers and boards. Allg. Papier-Rundschau no. 3: 109-10 (Feb. 12, 1952). [In German]

In answer to an inquiry, the systems in use by an accounting-book supply firm and three paper jobbers are explained. 1 table. E.S.

JUTE

BHATTACHARJEE, H. P., and CALLOW, H. J. Action of dilute caustic soda solution on jute fibre. I. Hydrolysis of ester linkages. J. Textile Inst. 43, no. 2: T53-9 (February, 1952).

The possibilities that lignin in lignocellulosic materials is combined by means of an ester linkage with nonlignin components, especially polyuronides, and that other ester groups might also occur in lignin-containing materials were investigated. When fat-extracted jute was treated with dilute hydrochloric acid, the free carboxyl content increased from about 3.3 to about 11.4 milliequivalents per 100 g., but when the fiber was treated with a dilute solution of caustic soda (0.25%), washed first in acid and then in water, the free carboxyl content increased to about 22.5 milliequivalents per 100 g. The rate of formation of free acid groups during the second stage was investigated and, under the conditions used, the reaction appears to be of the first order. Since one of the reactants (caustic soda) was present in excess, this result lends support to the claim that an ester group is undergoing saponification. Treatment of jute with dilute caustic soda solution (0.1 *N*) without washing leads to the much greater apparent acid content of about 111 milliequivalents per 100 g. This has been shown to be caused by the formation of an acid

which is volatile in steam and, since acetic acid only could be detected in the distillates, it is suggested that its formation resulted from hydrolysis of acetyl groups within the fiber. 4 tables, 1 figure, and 10 references. M.W.

SEN, M. K., and MUKHERJEE, R. R. The structure of jute. Part I. The x-ray diffraction pattern. J. Textile Inst. 43, no. 2: P114-21 (February, 1952).

The information on the physical structure of jute which has been obtained by x-ray methods is summarized and compared with the cellulose diagram as typified by the diagram of ramie; the publications which have appeared in this connection are reviewed. 2 tables and 26 references. M.W.

LIGNIN

KRATZL, K., and KELLER, I. The structure of the side chains in lignosulfonic acid. V. Monatsh. 83, no. 1: 197-204 (Feb. 15, 1952). [In German] *cf.* B.I.P.C. 20: 321.

Spruce lignosulfonic acid (12.4% methoxyl, 4.8% sulfur, and 12.1% ash) isolated from its quinoline salt has been subjected to an alkaline hydrolysis with sodium hydroxide solutions of increasing concentrations, which causes a similar increase in acetaldehyde formation. With 0.1 *N* sodium hydroxide for 6 to 14 hours, 0.02-0.04% acetaldehyde and 0.05-0.1% vanillin are obtained. The highest yields result with *N* and 2 *N* sodium hydroxide, whereby one mole of acetaldehyde per 15-20 methoxyl groups is formed. The yield of acetaldehyde is always greater than that of vanillin, probably on account of secondary reactions which the vanillin undergoes. Coniferyl aldehyde, when heated with *N* sodium hydroxide, gives 76% vanillin and 71.5% acetaldehyde, or approximately equimolecular amounts. Methylated lignosulfonic acid (26.4% methoxyl, 3.34% sulfur), when subjected to an alkaline hydrolysis, gives a mixture of acetaldehyde, veratraldehyde, vanillin, and a carbonyl compound which has not yet been identified. The fact that vanillin is obtained from a methylated lignosulfonic acid (assuming that it has been completely methylated) indicates that a part of the vanillin from unmethylated lignosulfonic acid must originate from central lignin building stones (masked guaiacyl groups). 1 table, 4 figures, and 13 references. F.E.B.

KRATZL, K., and KELLER, I. Sulfonation of lignin preparations and cleavage of the lignosulfonic acids to vanillin and acetaldehyde. Monatsh. 83, no. 1: 205-9 (Feb. 15, 1952). [In German]

Three carbohydrate-free lignin preparations, namely, Brauns' native spruce lignin, Freudenberg's cuproxam beech lignin, and Willstätter spruce lignin, were sulfonated in 99, 79, and 94% yields, respectively. These lignosulfonic acids were hydrolyzed first with 3.8% sodium hydroxide and then with 19.4% sodium hydroxide, and the acetaldehyde and vanillin were determined. Yields of 1.32-1.83% acetaldehyde and 2.43-4.77% vanillin indicated that the "masking" of alkali-cleavable groups is inherent in the lignin molecule. 2 figures, 1 table, and 11 references. I.A.P.

LEOPOLD, BENGT. Studies on lignin. Part X. Nitrobenzene oxidation of the products formed by the condensation of resorcinol with lignin models. Acta Chem. Scand. 5, no. 9-10: 1393-4 (1951). [In English] *cf.* B.I.P.C. 22: 499.

Vanillyl alcohol and resorcinol in hot acid solution yield a crystalline prod-

uct assumed to be 4,6-divanillylresorcinol. Similarly, two other complex ethers of guaiacyl glycol (*cf.* B.I.P.C. 20: 566-7) yielded amorphous products which appeared to contain one molecule of resorcinol per guaiacyl residue. These products gave a 30-33% yield of vanillin upon oxidation with nitrobenzene and alkali. The decrease in vanillin production was the same as that found for lignosulfonic acids after resorcinol treatment. 1 table and 4 references. I.A.P.

LINDGREN, BENGT O. The sulphonatable groups of lignin. Svensk Papperstidn. 55, no. 3: 78-89 (Feb. 15, 1952). [In English]

In a comprehensive review the chemistry of the sulfonation of lignin is discussed. As shown by Hägglund, the dissolution of lignin occurs in two stages: in the first stage, sulfonation takes place, and in the second stage a hydrolysis occurs, but whether this hydrolysis consists of a cleavage of a lignin-carbohydrate or a lignin-lignin linkage is still open to discussion. Sulfonation of lignin occurs at various hydrogen-ion concentrations, but since lignin is more readily dissolved by sulfite solutions of a pH of 6-7, the dissolution cannot be explained on the basis of a hydrogen-ion catalyzed reaction. With reference to his own experiments with model substances and those of other investigators, the author discusses the possible combination of the lignin building stones in the lignin molecule and suggests a scheme for this combination which leads to the conclusion that lignin is formed from lignin-building units consisting of four to six phenylpropane lignin building stones. On the basis of this scheme the reaction of the sulfite at various pH is discussed, with particular reference to Erdtman's A and B groups and Mikawa's X and Z groups. As a result of this discussion the author arrives at the conclusion that most, if not all, of the phenylpropane building stones possess a benzyl alcohol or benzyl alkyl ether grouping. These are partly ruptured upon sulfonation, thus liberating Erdtman's B′ groups which are then sulfonated. Because there is a close analogy between the sulfonation of the veratrylglycerol α-alkyl-β-guaiacyl ethers and the B′ groups, it is suggested that a large portion of the lignin building stones has this type of structure. 5 figures and 81 references. F.E.B.

STONE, J. E., and TANNER, K. G. Wheat straw native lignin. Can. J. Chemistry 30, no. 2: 166-7 (February, 1952).

The isolation of native lignin from mature wheat straw by the extraction of the finely ground material with ethanol at room temperatures and the removal of the water- and ether-soluble fractions is reported. The 0.238 g. of crude native lignin which was obtained from 563 g. of straw represents a yield of 0.04% compared with yields of 0.7 to 1.5% which have been reported for various woods. Micro alkaline nitrobenzene oxidations of each fraction indicate that water- and ether-soluble fractions differ from the "native" lignin fraction and from the lignin remaining in the straw in that they give rise to different ratios of vanillin to syringaldehyde, and that the aldehyde yield from the crude and partially purified native lignins is much lower than the yield from the lignin which remains in the straw. 1 table and 5 references. M.W.

WACEK, A., and ZEISLER, F. The synthesis of 2,3-methylphenylcoumarone and 2,3-phenylmethylcoumarone and their oxidative cleavage. Model experiments related to the oxidation of lignin. Monatsh. 83, no. 1: 5-12 (Feb. 15, 1952). [In German]

By condensation of α-hydroxypropiophenone with phenol in the presence of boric acid anhydride at 170-180°C. for 3.5 hours, a mixture of isomeric

2,3-methylphenyl- and 2,3-phenylmethylcoumarones was prepared which was oxidized with chromic and peracetic acids and with sodium chlorite, as applied to the oxidation of lignin. Benzoic acid, *o*-hydroxyacetophenone, and *o*-hydroxybenzophenone were found among the oxidation products. 1 table and 11 references. F.E.B.

LIGNITE

ONTARIO AND MINNESOTA PAPER COMPANY. Use of lignite at Fort Frances and Kenora. Pulp Paper Mag. Can. 53, no. 2: 71-2 (February, 1952).

O and M engineers report a substantial saving in steam cost since complete conversion to lignite fuel at the Kenora, Ont. newsprint mill and partial conversion at the Fort Frances, Ont. pulp and paper mill have been effected. Where transportation costs of lignite are not prohibitive, it has the advantages of lower cost over coal and of less susceptibility to shortage during a national emergency. The installation of spreader-type stokers has also resulted in greater flexibility of operation, since either lignite or bituminous coal can be used as fuel. A pneumatic conveyor system has solved the ash disposal problem. 4 illustrations. M.W.

MACHINERY

PAPER BOX AND BAG MAKER. Modern machinery and equipment. Paper Box Bag Maker: 9-14, 16-17, 19-20, 22-4, 26-7 (Annual, 1952).

A review is presented of machines which are used in the paper- and board-converting industries. Both British- and foreign-made equipment are described, and special emphasis is placed on new and improved types. 27 illustrations. M.W.

MACHINERY—BOARD MACHINES

ANON. A new board machine in the Arnsberg mill of the Feldmühle. Wochbl. Papierfabr. 80, no. 2: 42-3 (Jan. 31, 1952). [In German]

A brief description is given of the installation and construction of the new board machine at Arnsberg; it consists of six vats and one Fourdrinier wire and has a daily output of approximately 60 tons of imitation chromo board. 2 illustrations. E.S.

MACHINERY—CONVERTING MACHINERY

HIGH PRODUCTION MACHINE COMPANY, INC., *Philadelphia.* New transparent box "robot." Am. Boxmaker 41, no. 3: 18-21 (March, 1952); Boxboard Containers 70, no. 711: 32 (March, 1952).

A new transparent-box machine, called the Vue-Matic, is fed from a roll of acetate sheeting and operates automatically at a speed of approximately 900 boxes per hour. Smooth operation is achieved with compressed air and vacuum drives and controls; high-frequency heat is employed for sealing the corners. The machine is compact, easily set up, and flexible in the range of sizes that can be produced. Change-over from one size to another takes less than two hours. It is claimed that this machine produces boxes of higher quality and superior appearance at lower labor cost than any manufacturing operation yet devised for rectangular acetate boxes. 6 illustrations in the first reference and 3 in the second. M.W.

MACHINERY—DANDY ROLL

KILPPER, WILHELM. Studies of the influence of the dandy roll on sheet properties. Das Papier 6, no. 3/4: 44-6 (February, 1952). [In German]

Reference is made to several experiments for establishing the effect of the woven dandy roll (I) on certain physical properties of the resulting paper sheets made from quite different furnishes. The results indicate that (I) does not influence breaking length, stretch, shrinking, or dimensional stability of the paper, whereas it enhances the alignment of the fibers in the machine direction. The primary function of (I) is the improvement of the look-through of paper by counteracting fiber agglomerations (flocculation) and flattening the top surface of the sheet. Even an expert will not be able to detect differences in two papers prepared with and without the use of (I) under otherwise identical conditions until a comparison of the look-through is made. It is incorrect to install (I) at the very end of the suction part of the wire, because the sheet is then already too dry for eliminating fiber flocs; it would be just as incorrect to place it too far ahead of the suction, so that reflocculation behind (I) might take place. (I) is not effective on high-speed paper machines or with short-fibered pulps or furnishes with a high filler content; the best results are obtained with long-fibered furnishes on low- and medium-speed machines. 6 figures and 1 reference. E.S.

MACHINERY—DRIVE

BALL, A. N. Mill engineer's selection of a paper machine drive. Part II. Tappi 35, no. 3: 112-16 (March, 1952); *cf.* B.I.P.C. 20: 493-4.

The various types of drives for paper machines are divided into four main divisions, as follows: (1) sectional electric drives, (2) single-motor electric drives, (3) direct-connected turbine drives, and (4) hydraulic variable-speed drives. These are discussed on the basis of the results of a questionnaire which was distributed to the mills. 5 figures. E.S.

MACHINERY—DRIVE, ELECTRIC

FISHER, L. W. Winder drives. Pulp Paper Mag. Can. 53, no. 3: 206-14 (Convention, 1952).

The author discusses, from a performance and economic viewpoint, the most widely used types of electrical drives available for two-drum winders, including wound-rotor and adjustable-speed a.c. motor drives with mechanical tension, d.c. adjustable-voltage drives with rheostat control or with regulator, and regenerative tension drives. In conclusion, electric drives for auxiliaries (rider rolls and slitters for either score or shear cutting), comparative costs of winder drives, and power requirements find consideration. 15 figures and 1 reference. E.S.

MACHINERY—ELECTRIC EQUIPMENT

ANON. Wattless current in electric plants. Wochbl. Papierfabr. 80, no. 1: 12-13 (Jan. 15, 1952). [In German]

The origin and disadvantages of the wattless current are explained, not only for purchased power where in the contract, in addition to the energy charge, a so-called demand charge is made, but also in the case of self-generated power where larger and more expensive installations are required on its account. The use of electric condensers is recommended for the

elimination or at least reduction to a minimum of the wattless current. E.S.

PULP & PAPER. New styles in panels. Pulp & Paper 26, no. 3: 64, 66, 68, 70, 72 (March, 1952).

Reports are presented from a number of mills and manufacturers on the use of central graphic instrument panels and miniaturized panels for entire operations. The graphic panel boards manufactured by Panellit, Inc., Chicago, Foxboro Co., and Minneapolis-Honeywell Regulator Co., and those used at the St. Joe Paper Co., Weyerhaeuser Timber Co., Puget Sound Pulp & Timber Co., and Quebec School of Paper Making are described. 6 illustrations. M.W.

SKILLEN, J. P. Adequate switching equipment for power distribution in paper mills. Pulp Paper Mag. Can. 53, no. 3: 242-6 (Convention, 1952).

The author gives a brief historical outline of the development of switching equipment from its earliest beginnings and discusses future trends, with particular reference to the selection of air or oil for circuit breakers. In the last section, an attempt is made to point out the potential hazards in an overgrown system, and correct methods for projecting expansions from the angle of industrial power distribution are listed. Unit substations which keep the system sufficiently split up to limit fault currents are the safest solution, although in revamping existing mills other compromises must often be employed. 11 figures. E.S.

MACHINERY—FELTS

F. C. HUYCK & SONS, *Rensselaer, N.Y.* Nylon ride for paper. Chem. Week 70, no. 13: 40-1 (March 29, 1952); Fibre Containers 37, no. 4: 64 (April, 1952).

A successful run on a paper machine equipped with an all-synthetic felt at the Camas mill of Crown Zellerbach is reported. The performance of the nylon felt is described as superior from the standpoint of water removal, running qualities, and resistance to frictional wear. M.W.

MACHINERY—GRINDERS

COLLICUTT, S. A., and COCHRANE, J. A. Modern high speed grinders at Powell River. Pulp Paper Mag. Can. 53, no. 3: 215-19, 224 (Convention, 1952).

The groundwood for the newsprint machines at Powell River is produced on 58 three-pocket, hand-fed grinders; an additional capacity of 120 tons per day will be required by a planned increase in production. In line with a long-range modernization program, the increment in groundwood tonnage will be produced with modern supergrinders. Certain experimental investigations were carried out with Waterous magazine grinders and Waterous-Great Northern grinders at Ontario newsprint mills to provide data from which to decide the most suitable type and design for sawn wood in block lengths of 64 in., as used in Powell River operations. A ring grinder was installed temporarily at Powell River and operated for a period of a few months. The effect of peripheral speed on the pulp and grinding characteristics was investigated, using a miniature grinder and covering the range of 3000 to 5500 ft./min. The present grinder stones operate at 3800 ft./min.; the modern grinders with larger stones will operate at a peripheral speed of approximately 5000 ft./min. A summary of the results of the performance of the ring grinder and the continuous operating conditions of the miniature

grinder is presented. In the light of the experience and information obtained to date, the decision is to install two Waterous-Great Northern grinders, each grinder to produce 60 tons of screened pulp per day. 2 tables and 8 references. E.S.

GRAHAM, DUNCAN. The operation and maintenance of grinder load regulators on Waterous hydraulic grinders. Pulp Paper Mag. Can. 53, no. 3: 194-8 (Convention, 1952).

In the average newsprint mill of today around 80% of the stock used in the manufacture of newsprint is groundwood stock, and the power consumed for this purpose is around 67% of the total primary mill load. This load can be varied slightly and, under control of a master governor, the maximum demand can be controlled at any desired figure. The construction and operation of the grinder-load regulators at the Thunder Bay newsprint mill of the Abitibi Power & Paper Co. are described. The master governor controls the individual line governors which, in turn, control the motor load by varying the pressure on the pressure shoes to balance the load setting on its wattmeter control element. The control stands (one for each pocket) control the direction of movement of the pressure shoes and keep the non-grinding time to a minimum. The three units—master governor, individual governor, and control stands—working together maintain a maximum output with a minimum of power. Certain maintenance problems over a three-year period are discussed. 9 figures. E.S.

MACHINERY—HOODS

K. H. The ventilation and conditioning of paper machine rooms from the viewpoint of the papermaker. Wochbl. Papierfabr. 80, no. 2: 41-2 (Jan. 31, 1952). [In German]

The advantages of the KOFRA ventilation system are described; it involves the use of an aluminum hood with removable panels. E.S.

MACHINERY—PACKAGING MACHINERY

AUTOMATIC PAPER BOX CORPORATION, *Chicago*. Device simplifies bundling those hard-to-handle boxes. Boxboard Containers 70, no. 711: 19 (March, 1952).

A device is described to aid in wrapping compressible bundles which, with ordinary wrapping procedures, often become loose and distorted when subjected to the weight of boxes stacked on them. The compressing device holds the bundle under pressure during the wrapping operation, and uniform, tightly wrapped bundles may be easily produced. 5 illustrations. M.W.

MACHINERY—PAPER MACHINE—YANKEE TYPE

ANON. A giant Yankee cylinder at the Papeteries de Roquetort. Rev. papiers et cartons 14, no. 22: 692 (Dec. 15, 1951). [In French]

Reference is made to a new Yankee cylinder with a diameter of 4.5 m., a width of 4 m., and a weight of 50 tons, cast in one piece from special alloys by Voith in Germany. Transportation on a special truck drawn by one powerful tractor and pushed by two others presented special problems. The length of the convoy amounted to 52 m. and its total weight to 112 tons. A special route had to be selected with particular consideration of the width of the roads and the carrying capacity of the bridges which had to

be crossed. About a month was required to convey the cylinder from Heidenheim to Roquetort. E.S.

MACHINERY—PIPING

HEDSTRÖM, BENGT O. A. Flow of plastics materials in pipes. Ind. Eng. Chem. 44, no. 3: 651-6 (March, 1952).

The importance of the flow curve in the interpretation of non-Newtonian flow data is stressed, and a simple criterion is proposed which distinguishes between laminar and turbulent flow of plastics (e.g., thick suspensions) which flow isothermally in long, straight, and smooth cylindrical pipes. In the case of turbulent flow, the relation between the Fanning friction factor curve of Newtonians is found to be at least approximately applicable also for plastics if the Reynolds number is defined as $DV\rho/\mu_P$, where D is the pipe diameter, V the linear velocity, ρ the density, and μ_P the plastic viscosity. 2 tables, 8 figures, and 8 references. M.W.

MACHINERY—PRINTING MACHINE

ANON. Bigger printed bags. Modern Packaging 25, no. 7: 226-8 (March, 1952).

The recent development of a new aniline-type printing press has made possible high-speed, economical printing of a web of paper as wide as 128 inches. A typical product of the press is a three-color printed bag which is used by Sealy, Inc. for packaging mattresses. The three-ply kraft bag now carries the complete Sealy trademark; in this way brand identity, as well as complete protection of the mattress, is provided from manufacturer to the ultimate consumer. A similar packaging procedure has been adopted by Kidcraft Mfg. Co., Chicago, for crib mattresses. The aniline press which makes these bags possible can also give an over-all tint to a complete web of paper. 5 illustrations. M.W.

MACHINERY—PUMPS

DOLMAN, R. E. Pumps. Chem. Eng. 59, no. 3: 155-69 (March, 1952).

A definitive classification of all types of pumps is presented, with special emphasis on chemical pumps. 58 figures. M.W.

MACHINERY—ROPES

ROSS, ALEX C. The sinews of industry. Can. Pulp Paper Ind. 5, no. 3: 8-11 (March, 1952).

The manufacture, applications, handling, and maintenance of wire ropes are discussed. 10 illustrations. M.W.

MACHINERY—SCREENS

PALMER, ARTHUR. Screening book groundwood from western softwoods. Paper Mill News 75, no. 12: 54 (March 22, 1952).

The improvement in screen plates which made possible the production of a competitive grade of coated paper from western softwoods is outlined. The present practice employs a combination of Inconel plates with 0.045- and 0.050-inch perforations and a plate thickness of 26 gage. These plates are longer-wearing than copper, which was formerly used, and have the additional advantage of uniformity in perforation size. M.W.

MACHINERY—SLITTERS AND WINDERS

PAPER CONVERTING MACHINE COMPANY, *Green Bay, Wis.* Paper Converting Machine Co. has new winder for household rolls. Am. Paper Converter 26, no. 3: 21-2 (March, 1952).

An automatic rewinder is designed specifically for the mass production of standardized household rolls of waxed paper. The operating principle of the machine is based on the fact that the web travels at a constant rate of speed. The web is wound into rolls, cut off, transferred to the next set of cores at full machine speed, and the finished rolls are stripped off the mandrels automatically. The machines are built to handle waxed paper webs up to 60 inches in width and are equipped with an automatic counting arrangement. 1 illustration. M.W.

SHIELDS, E. A. Air loading of Pope reel core shaft (first prize, gadget competition winners). Pulp Paper Mag. Can. 53, no. 3: 148 (Convention, 1952).

A device is described which consists of two air cylinders, one at each side of the reel, to prevent bouncing of the finished roll of paper at higher speeds. The arrangement and mode of operation are outlined briefly. 1 diagram. E.S.

MACHINERY—THICKENERS

WALSH, E. P. A discussion on groundwood thickening methods and equipment. Pulp Paper Mag. Can. 53, no. 3: 199-205, 214 (Convention, 1952).

The groundwood thickening processes for various newsprint mills are described and differences in operating procedure are noted. An attempt has been made to point out the advantages and disadvantages of each system and to arrive at some standard level of comparison. The capacity, operating performance, maintenance cost, and other pertinent data for numerous types of pulp thickeners are recorded and discussed at length. From this it would appear that, in general, the couch-roll type of thickener, whether it be a vacuum filter or a simple decker, is the most efficient thickening equipment. The maintenance costs listed are not sufficient for true comparison purposes. 8 tables, 5 flowsheets, and 1 figure. E.S.

MACHINERY—VALVES

ANON. Nordstrom valves in the pulping process. Paper Mill News 75, no. 12: 85-6 (March 22, 1952).

The valve problems encountered in the different pulping processes are discussed briefly, and the Nordstrom valve which is suitable in each case is described. 5 illustrations. M.W.

MACROMOLECULAR CHEMISTRY

INTERNATIONAL UNION OF PURE AND APPLIED CHEMISTRY. Report on nomenclature in the field of macromolecules. J. Polymer Sci. 8, no. 3: 257-77 (March, 1952).

A series of recommendations are presented with regard to the nomenclature in the fields of macromolecules in general, sugars, cellulose, and starch, viscosities of solutions, osmotic pressure, turbidity, etc., copolymerization kinetics, and linear high polymers. M.W.

MATERIALS HANDLING

CANADIAN PULP AND PAPER ASSOCIATION. *Technical Section. Materials Handling Committee.* Lap and pulp sheet handling in pulp and paper mills. Pulp Paper Mag. Can. 53, no. 3: 279-85 (Convention, 1952).

Each phase of handling for common basic operations was studied by the Committee and case histories of good installations are described for the removal of laps at the pulp mill, intermill transportation, pulp storage, and charging of pulpers and beaters. 13 figures and 1 reference. E.S.

TOLVI, ERKKI K. The handling of sheeted paper from cutters to railroad cars. Paper and Timber (Finland) 34, no. 2: 40-2 (February, 1952). [In Finnish; English summary]

The handling of sheeted paper, including the products from kraft paper mills, is expensive and slow as compared with the handling of paper in rolls. The purpose of sorting is the removal of defective sheets; present endeavors strive to prevent their formation through control measures at the different stages of manufacture from beater room to the cutters. Defective sections of the web have to be removed; this should preferably be done before rewinding and cutting. The handling of sheeted paper involves a large amount of manual labor; this should be facilitated and simplified by mechanical handling devices to the greatest possible extent. 8 figures. E.S.

MICROSCOPY

[KOTTE, HANS] Microscopic methods for the investigation of wood, pulp, and paper. The microscope as an aid in the mechano-technical testing of paper. Allg. Papier-Rundschau no. 1: 26; no. 4: 167-70 (Jan. 12, Feb. 25, 1952). [In German]

The first part of the article is a discussion of volume five (in two parts) of the new German treatise "Handbuch der Mikroskopie in der Technik," Frankfurt am Main, Umschau Verlag, 1951; this volume deals with the microscopy of wood, pulp, and paper. The second article contains a few excerpts and reproductions from the chapter on microscopical paper testing by Erhard Liebert. It includes photomicrographs of the torn edge of a gummed tape, a filter paper, a currency paper, and an air-mail paper, and of the look-through and surface of the same specimens, as well as a reproduction of a coat of arms embossed in a high-grade paper. 13 figures. E.S.

MOLECULAR WEIGHT

NUSSENBAUM, SIEGFRIED, and HASSID, W. Z. Estimation of molecular weight of starch polysaccharides. Anal. Chem. 24, no. 3: 501-3 (March, 1952).

The methods for determining the molecular weight of amylodextrins, amyloses, and amylopectins based on osmotic pressure or ultracentrifuge measurements are laborious and require large amounts of material. The existing colorimetric methods yield only relative molecular weights. The present method is based on the determination of the reducing group of the polysaccharide by an adaptation of the Folin and Malmros colorimetric procedure for the estimation of glucose (*cf.* J. Biol. Chem. 83: 115-20 [1929]). Alkaline ferricyanide in the presence of cyanide is used as an oxidizing agent. A comparison of the molecular weights of a number of amylodextrins,

amylose starch fractions, synthetic polysaccharides, and amylopectin fractions of low molecular weight with those obtained from osmotic pressure and other measurements showed a fair agreement. The method allows the rapid estimation of molecular weights of some polysaccharides and requires little material. 3 tables, 1 figure, and 11 references. E.S.

MORTARS

HAAS, RUDOLF. Comparative testing of digester mortars. Das Papier 6, no. 3/4: 37-43 (February, 1952). [In German]

Experiments for evaluating the acid resistance, swelling properties, and adhesiveness of six different digester mortars and the results of the tests are described. The samples included: the Höchst sodium silicate cement SWD-Z (I); the Norwegian sodium silicate cement Welhaven which contains litharge (II); the synthetic resin cement Asplit A without (III) and with (IV) subsequent hardening; and the synthetic resin cement Plania without (V) and with (VI) subsequent hardening. The purpose of the hardening treatment is the acceleration of the polymerization of the synthetic resin component of the mortars which are already "aged" to a certain extent when exposed to the cooking acid for the first time. The preparation of the samples and the testing procedures and schedule are described in detail. Two rods each were prepared from the six different materials; one of the rods was kept as control in the air-conditioned laboratory, and the other was inserted into a perforated, acid-resistant steel sleeve. The sleeves were hung into a flat, acid-resistant steel basket which was screwed close to the wall inside the digester, so that all samples were exposed under actual operating conditions. The specimens were submitted to a total of 129 sulfite cooks; the entire testing period lasted 162 days, during which time the samples were removed, measured and weighed, and returned to the basket in the digester at definite intervals. Attention is drawn to the accelerated rate of all reactions which took place with the samples exposed to the cooking acid from all sides, as compared with the practical application of the mortars in digester linings under actual operating conditions. The following results were obtained: (I) and (II) were not found absolutely acid-resistant; their density varies. (III) and (IV) show surprising shrinkage and swelling behavior, although the phenomena are less pronounced in (IV). The best results were obtained with (V) and (VI). These mortars have an excellent density and regular swelling properties with insignificant shrinkage; they are therefore particularly suitable for linings with elastic and temperature-resistant carbon bricks. The effect of the hardening treatment was found to be beneficial. 1 table and 20 figures. E.S.

NEWSPRINT

NEWSPRINT ASSOCIATION OF CANADA. Canada blueprints production increases. Newsprint Service Bur. Bull. no. 410: 2 (March, 1952).

Increases in capacity which are under way or planned in Canada (exclusive of the Arrow Lakes mill of Celanese Corp. of America) will bring Canadian newsprint production to a total of 6,141,000 tons annually by 1960; if conditions warrant it, this figure can probably be increased to 6,977,000 tons per year. The latter figure represents an annual increase of 175,000 tons in the period 1950-1960. In a survey prepared by the American Newspaper Publishers Association, it was estimated that the total 1960 need for newsprint from Canadian and U. S. mills would be 8.7 million tons. The Canadian and U. S. expansion planned to date is only 300,000 tons short of this estimate, and the Arrow Lakes project will make up 25-30% of the deficit. Moreover, the estimates of Canadian expansion may prove to be low since they are based on the current economic situation. 2 tables. M.W.

NEWSPRINT—STATISTICS

AMERICAN NEWSPAPER PUBLISHERS ASSOCIATION. Newsprint consumption by states. Newsprint Service Bur. Bull. no. 410: 3 (March, 1952); *cf.* B.I.P.C. 20: 576.

The totals for the consumption of newsprint by states for 1950 and 1951 are presented. The 1950 figures represent 86.67% of the estimated total of 5,936,941 tons, and the 1951 figures 85.4% of the estimated total consumption of 5,974,865 tons of newsprint of all users. In 25 states the 1951 consumption was higher than that in 1950; New York led in both years with a total of 945,888 tons in 1950 and 930,342 tons in 1951. 1 table. M.W.

PACKAGING

ANON. Packaged frozen chicken parts. Fibre Containers 37, no. 3: 116, 118 (March, 1952).

Reference is made to an improved method of packaging chicken-part cartons which is based on a wet-strength bag holding six cartons developed by Union Bag & Paper Corp. The bag is specially treated to prevent the cartons from freezing together while in storage; four bags are packed in a corrugated container. This system is claimed to simplify the handling by the wholesale distributor who is no longer forced to break into smaller units the shipments of 24 cartons per corrugated container which were previously supplied. 4 illustrations. E.S.

DEVENEAU, WILLARD F. A guide to effective package design. Fibre Containers 37, no. 3: 102, 104, 106, 108 (March, 1952); Paper Box Bag Maker: 4-6, 8 (Annual, 1952).

The author presents a series of points to be considered in the development of functional and attractive package designs. These points concern the product itself; its market, distribution, and promotion; package structural design; and package merchandizing. 1 illustration. M.W.

FLOWERWOOD, INC., *Crystal Lake, Ill.* Saying it with flowers in super markets, department stores. Packaging Parade 20, no. 230: 84-5, 96 (March, 1952).

To induce impulse buying of flowers, camellias and gardenias are now being prepackaged in two-flower cartons for merchandizing in supermarkets and department stores. After cutting, the flowers are transferred on moistened trays to the packaging line where they are placed in openings on an insert which is part of a waxed folding "Kliklok" carton. The cartons are arranged on a tray, sprayed with water, and then overwrapped with 450 MSAT cellophane, and heat sealed. The cartons are packed in corrugated boxes and stored in a cooler until they are shipped to market in air-conditioned trucks. 11 illustrations. M.W.

GOULD, A. L. Packages for foodstuffs. J. Inst. Packaging no. 10: 11-13; discussion: 13-14 (1950).

American food packaging practices are contrasted with British methods, and particular applications of coated and treated papers, polyethylene, Pliofilm, cellophane, foils, glassine, and saran for packaging fresh and frozen meats and vegetables are described. M.W.

MODERN PACKAGING. Silver anniversary 1927-1952. Modern Packaging 25, no. 7: 99-166 (March, 1952).

In this issue, which commemorates the twenty-fifth year of publication of *Modern Packaging*, a section is included in which the progress in modern packaging during this period is reviewed in the following articles: Modern Packaging. Our first quarter-century, p. 100-11; Browne, Christopher W. Changing concepts of packaging, p. 112-19; Holbrook, Herbert T. The materials of packaging, p. 120-9; Anon. Package forms, p. 130-7; Mohlman, George A. Packaging machinery, p. 138-45; Southwick, C. A., Jr. Technical knowledge, p. 146-51; Arens, Egmont. Package design, p. 152-9; and Howlett, Henry J. The packaging associations, p. 160-5. Illustrations accompany each of the articles. M.W.

MOREHOUSE, F. G., and POSTWEILER, N. W. How properties of materials affect packaging speeds. Food Eng. 24, no. 3: 71-5 (March, 1952).

Some of the difficulties that can arise in connection with the use of ordinary commercial-grade packaging materials are discussed. Sticking of waxed paper is usually the result of a low melting-point paraffin used in waxing the paper and can be corrected by specifying a high-melting point wax and using and storing waxed papers at temperatures between 60 and 75°F. A low degree of stiffness or too much residual stiffness can cause a lack of "squareness" in cartons, and these properties can be measured by laboratory testing. Moisture content and absorbency should also be specified to avoid insufficient stiffness and gluing and printing difficulties. The development of specifications for adhesives is often difficult, and the best formulation should be worked out with the adhesive supplier. A density specification avoids suction-feeding troubles. A tendency of cellophane to tear may be caused by the presence of minute cracks or splits along the edge of the sheet which are often caused by improper storing or handling. The use of the proper weight of cellophane which is kept dust-free minimizes sealing troubles. The size and shape of a package should also be given proper consideration in order to insure maximum production-line efficiency. 9 illustrations. M.W.

SCHOMMER, W. P. Developing your packages for high line output. Food Eng. 24, no. 3: 68-71 (March, 1952).

The packaging development and control program which is used by General Mills is described. A packaging committee, which consists of representatives of the packaging section of the research department and the products control, purchasing, and manufacturing departments, studies packaging problems and co-ordinates the data supplied by the various departments in which containers are developed and tested. By pretesting of container performance, and furnishing exact specifications to suppliers, maximum efficiency is guaranteed for high-speed packaging work. 2 tables and 5 figures. M.W.

WHIRLPOOL CORPORATION, *St. Joseph, Mich.* Whirlpool operation case-seals giant size corrugated container. Packaging Parade 20, no. 230: 90-1 (March, 1952).

Special handling and sealing equipment is used to package 300-lb. automatic washing machines and driers in corrugated boxes. The units are placed on roller conveyors, by which they are carried, together with solid fiber sheets, to a belt conveyor. A bag is placed over each machine and a corrugated box positioned over it. Corner protectors are inserted which hold each machine in place by the pressure-pack principle. Either double-top pads or a spacer carton protects the top of the box. The final sealing process is performed by sealers which are adjusted for each box used. 10 illustrations. M.W.

PAPER—ABSORBENCY

ANON. The A B C of papers and cartons. Papetier 6, no. 1: 31, 33; no. 2: 27, 29 (January, February, 1952). [In French] *cf.* B.I.P.C. 22: 598.

The required moisture content of paper, its capillarity and absorptivity (which may be an asset or a disadvantage, depending upon use requirements), and methods for reducing these properties by sizing (tracing papers) and beating (greaseproof and glassine) are discussed. In conclusion, reference is made to the preferential absorptivity of paper for different liquids and to the possibility of special ink formulations with heavier and more fluid oils, which will penetrate paper to different depths and produce double-tone effects in halftone engravings. The process can be used only with papers of the correct absorptivity; the prints are not fast to light and water. E.S.

PAPER—COATED (HOT-MELT)

SWEC, L. F., and CLACK, H. L. The properties of saran-coated papers prepared by a hot-melt process. Tappi 35, no. 3: 88-92 (March, 1952); Am. Paper Converter 26, no. 5: 16-18, 20, 25 (May, 1952).

Sarans, copolymers of vinylidene chloride, have been applied to paper in several different ways to utilize their unique properties in the packaging field. They have been applied from solvent and aqueous emulsion systems. Films of saran have been used unsupported and laminated to paper. The hot-melt method of applying resin to paper, which has been successfully used in the past with polyethylene and copolymers of vinyl chloride, has more recently been used to apply saran to paper. A comparison of the properties of these polymers shows that saran excels in water, water-vapor, gas, oil, and chemical resistance. Certain features of the coating process are described briefly. Variations of properties of paper coated with saran by the hot-melt process as other parameters are changed are discussed. The following comparisons are shown: (1) water-vapor transmission rate *vs.* coating weight; (2) WVTR *vs.* aging at various temperatures; (3) WVTR *vs.* plasticizer loss; (4) oxygen, nitrogen, and carbon dioxide transmission rates; (5) resistance to various liquid chemicals; and (6) changes in burst, tear, and tensile strength of raw stock after various coating weights of saran have been applied. Uses are suggested which are based on the properties of the saran-coated paper. 3 tables, 10 figures, and 4 references. E.S.

PAPER—CONVERSION

GILES, F. T. D. After treatment to printed work. Paper & Print 25, no. 1: 40, 42, 44-5 (Spring, 1952).

The author describes the purpose and the effects on paper of the following processes: finishing, graining, cellulose varnishing, sheet varnishing, strip varnishing, water varnishing, combined varnishing and finishing treatment, plate rolling, and embossing. 1 illustration. M.W.

PAPER—CURLING

ABELE, WILH., and JÖRG, OTTO. The curling of wood-free writing and book papers. Allg. Papier-Rundschau no. 1: 16-17; no. 3: 114 (Jan. 12, Feb. 12, 1952). [In German] *cf.* B.I.P.C. 22: 261.

Additional reasons and cures for the curling of pure sulfite papers are listed, including the use of a British paper-conditioning machine; the re-

placement with noncurling, bleached sulfate papers; and special precautions during the manufacture of sulfite papers, such as correct beating, faultless wet presses with appropriate crowning of the rolls, uniform gradual drying without overdrying, and correct adjustment of the paper draws (i.e., not too tight). E.S.

PAPER—DEFECTS

DAY, FREDERICK T. Technical hints no. 2. Wrinkles and creases in paper; its causes and its correction. Paper & Print 25, no. 1: 34 (Spring, 1952); *cf.* B.I.P.C. 22: 419.

Extremes of relative humidity cause conditions which are frequently responsible for wrinkling and creasing of paper stocks; the best preventive measure is the control of temperature and humidity in store rooms and pressrooms. M.W.

PAPER—OPACITY

GIERTZ, HANS WILHELM. The opacity of paper pulps. IV. Sulfate pulps. Svensk Papperstidn. 55, no. 3: 72-7 (Feb. 15, 1952). [In Swedish; English and German summaries] *cf.* B.I.P.C. 22: 420.

The influence of the cooking conditions on the opacity of sulfate pulps was studied; both the cooking period and the amount of alkali were varied. Some pulps were bleached with chlorine and hypochlorite, whereas others were delignified with acid chlorite solutions. The specific scattering coefficient was determined with sheets made from wet and dried pulps. Detailed data on the cooking conditions are presented in three tables. The results of the present studies showed that the opacity of a pulp increases with cooking time and with increasing content of total alkali. As in the case of sulfite pulps, the opacity of sulfate pulps—whatever the cooking conditions—is closely related to the yield of the bleached pulp. However, the opacity of sulfate pulps is higher than that of sulfite pulps of the same yield, and a decrease in yield does not influence the opacity of sulfate pulps to the same extent as it does with sulfite pulps. Sulfate pulps have the same bulk as strong sulfite pulps of identical opacity but higher tensile strength. An increase of 1000 m. in breaking length corresponds to a decrease in the specific scattering coefficient of 18 units, as compared with 30 units for sulfite pulps. Hence, sulfate pulps are more suitable than sulfite pulps for papers which should combine high strength with high opacity. These differences between sulfite and sulfate pulps cannot depend upon the different amount of hemicelluloses present or different water-sorption properties. They may, however, be interpreted by assuming the formation of structural bonds in the fiber during the sulfate cook, most probably in the hemicellulose fraction. These results are considered in the light of McKinney's hypothesis (*cf.* B.I.P.C. 16: 224). 3 tables, 9 figures, and 5 references. E.S.

PAPER—SHEET FORMATION

KLAUDITZ, W. Contributions to the chemical and physical technology of wood and wood pulps. The study of the fundamental process of paper formation from wood. Holzforschung 5, no. 3: 58-67 (1951). [In German]

The author compares the process termed felting (I) with that of fiber bonding (II); in his opinion paper sheet formation and strength result largely from (II), in which the hemicelluloses, especially the polyuronides, serve as adhesives. To exclude (I) as completely as possible, the author prepared sheets in which the fibers were oriented in parallel. Pulping was ef-

fected very cautiously by subjecting a thin poplar veneer sheet (III) to a kraft cook, followed by careful washing and by a chlorite bleach which reduced the lignin from the original content of 21.9 to 0.79%. The resulting sheet (IV), yield 53.5%, contained 79.2% cellulose, 20% hemicelluloses, and 1.45% uronic anhydride, i.e., only about 15% of that of (III). In producing (IV), defibration did not occur, and the original wood structure was almost kept intact; its microstructure was surprisingly similar to that of (III). The strength properties of (IV) were tested both after pressing under pressures of 1 and 30 kg./sq. cm. and drying at about 95°C. Tensile strengths were, respectively, 2750 and 4760 kg./sq. cm., the breaking lengths 34,200 and 44,100 m., and the folding endurance values 11,300 and 4250. These high values are ascribed to (II) of the hemicelluloses in the lignin-free middle lamella and in the primary cell wall. The author also defibered (IV) and then, with and without beating, formed pulp sheets which were dried under pressures of about 1 and 10 kg./sq. cm. to effect adequate bonding. Beating resulted in considerable strength increases. The following values were obtained for unbeaten and beaten samples at the two pressures: tensile strengths, 417 and 839, 1065 and 1209 kg./sq. cm.; breaking lengths, 5580 and 9030, 11,500 and 12,300 m., and folding endurance values, 108 and 2580, and 6920 and 9870. Inasmuch as the strength characteristics of all sheets were developed as a result of (II), the author discards the term (I) and suggests the term *net formation* when fiber shortening and fibrillation have occurred. 4 tables, 10 figures, and 20 references. L.E.W.

PAPER AND PULP INDUSTRY

ANON. The French paper industry and the Monnet plan. Papeterie 74, no. 2: 74-5, 77, 79, 81, 83, 85 (February, 1952). [In French]

The year 1952 is the last year of operation of the Monnet plan. The provisions of the plan with regard to the pulp and paper industry, the results obtained to date, and reasons why certain goals have not been reached are discussed. Statistical information is included. 10 tables. E.S.

FOWLER, ROBERT M. C.P.P.A. President's report for the year 1951. Pulp Paper Mag. Can. 53, no. 3: 131-2, 391-2, 397, 399, 401, 403-4, 407-8 (Convention, 1952); Can. Pulp Paper Ind. 5, no. 4: 14-17 (April, 1952); Paper Mill News 75, no. 5: 12, 25 (Feb. 2, 1952). [Abridgment] *cf.* B.I.P.C. 21: 565.

The growth in the pulp and paper industry is reflected in the major economic progress in Canada during 1951. Included among the significant developments in the industry during the last year are: a trend toward a greater diversification of products, the expansion of research, and greater forest management and forest research activity. The growth in individual fields, government controls and their effects, the sulfur situation and other shortages, the woodlands, and the activities of the Association are discussed. M.W.

FOWLER, ROBERT M. The Canadian pulp and paper industry. Southern Pulp Paper Manuf. 15, no. 3: 69-70, 72, 74 (March, 1952).

The author summarizes the recent advances and expansions of the Canadian pulp and paper industry and reviews the possibilities for future expansion; he emphasizes the importance of thinking in terms of continental trends, since the industry in Canada is so closely linked with that of the United

States. He also points out the responsibility of the North American industry to make paper and paper products available for overseas consumption.
M.W.

FOWLER, ROBERT M. Pulp and paper in the future. Pulp Paper Mag. Can. 53, no. 3: 127-30 (Convention, 1952); Paper Trade J. 134, no. 5: 11-14 (Feb. 1, 1952); Paper Mill News 75, no. 5: 10 (Feb. 2, 1952). [Abridgment]

The Canadian pulp and paper industry has undergone a rapid expansion in recent years, and indications are that this expansion will continue. It is estimated that in the period from 1951 to 1955 the total new capital investment in pulp and paper facilities will exceed $600 million, a figure which is far in excess of the anticipated expenditure in any other Canadian industry. The present supply of wood is good, and surveys indicate that the volume of annual growth exceeds total annual depletion from all causes. Possible problems or dangers to the industry include failure of demand, which management should be capable of meeting; a shortage of raw materials, which would delay, but not prevent, expansion; and excessive taxation. A plan for maintaining a balanced budget during the period of defense expenditure rather than building up a government surplus is suggested to avoid inflation or deflation. It is also suggested that more attention be directed at expansion in the area of basic manufacture of raw materials rather than concentration entirely on greater specialization. M.W.

FUTODA, T. The pulp situation in the United States and Europe. J. Japan. Tech. Assoc. Pulp Paper Ind. 5, no. 6: 463-78 (November, 1951). [In Japanese]

A survey is presented of the geographical distribution of pulpwood growth in the United States and Europe (particularly Sweden and Germany). A description of the mill facilities in both areas is also included. 3 tables and 11 illustrations. E.G.S.

IMAI, H. Discussion of the American paper industry. J. Japan. Tech. Assoc. Pulp Paper Ind. 5, no. 6: 507-15 (November, 1951). [In Japanese]

This article is devoted to the research facilities and technical advances of the paper industry in the United States. 6 tables and 1 figure. E.G.S.

NISHIZAWA, A. Report on the American pulp industry. J. Japan. Tech. Assoc. Pulp Paper Ind. 5, no. 6: 485-506 (November, 1951). [In Japanese]

A detailed account is given of pulp mill facilities in the United States and Canada, with particular regard to process and equipment data. 20 tables and 12 figures. E.G.S.

THE NORWEGIAN PAPER MAKERS ASSOCIATION, *and others*. The Norwegian paper, pulp and timber industries 1951. Norsk Skogind. 6, no. 1: 4-10 (January, 1952). [In Norwegian and English] *cf.* B.I.P.C. 21: 565.

The conditions in the Norwegian forest products industries (including paper, board, chemical and groundwood pulps, and timber) for the year 1951 are reviewed by the different trade associations. Data on production,

consumption, prices, raw materials, sales, exports, and export taxes are included. E.S.

PELIEU. The economic future of Gabon. Papeterie 74, no. 2: 85, 87 (February, 1952). [In French]

With emphasis on the tropical forests in the French colony Gabon (French Equatorial Africa), the possibilities and problems involved in the establishment of a paper industry are discussed. One of the essential prerequisites is the development of regular air lines. E.S.

PAPER AND PULP MILLS

ANON. A visit to the paper mills at Condat. Papier, Carton et Cellulose no. 1: 20-4 (March-April, 1952). [In French] *(first number of a new French journal)*

The integrated operations of the Société Progil at Condat-le-Lardin (Dordogne) involve tannin extraction of chestnut wood, manufacture of bleached soda pulp from the extracted wood, and conversion to fine papers in the one-machine paper mill. The pulp and paper mills are undergoing an extensive modernization program which will increase the daily output from 27 to 50 tons. The installations are described briefly. 1 map and 17 illustrations. E.S.

DYCK, A. W. J. Howard Smith expands Cornwall Division. Paper Ind. 33, no. 12: 1428-9 (March, 1952); *cf.* abstract p. 598.

A brief reference is made to the addition of the new paper machine and the general expansion program of the company. 2 illustrations. E.S.

GUARD BRIDGE PAPER COMPANY, LTD. Guard Bridge Panorama. Paper & Print 25, no. 1: 18-23 (Spring, 1952).

The text of a new book, "Guard Bridge panorama," which contains a history of the Guard Bridge mill in Fife, Scotland is summarized, and a description of the process of making paper from esparto is given. Some photographs from the book are also reproduced, including the illustrations of the paper machine. 15 illustrations. M.W.

KOGE, Y. American paper mills. J. Japan. Tech. Assoc. Pulp Paper Ind. 5, no. 6: 515-21 (November, 1951). [In Japanese]

A brief description is given of each of 27 United States paper mills and one Canadian mill. 1 table. E.G.S.

KVP COMPANY LIMITED, *Espanola, Ont.* New parchment plant begins processing work. Can. Pulp Paper Ind. 5, no. 3: 12 (March, 1952); Tappi 35, no. 3: 110A, 112A (March, 1952); Paper Ind. 34, no. 1: 41-2 (April, 1952).

A new parchment processing plant for the production of vegetable parchment has been opened at the Espanola pulp and paper mill of the KVP Company. The parchment is made from spruce, jackpine, and poplar pulp in the company's sulfate mill at the rate of 275 tons per day. A portion of the production is being used for waterleaf, a soft, absorbent sheet which is run through sulfuric acid and washed several times to form a tough, greaseproof, lint-free sheet. Parchment is made on a 37-ft. Pusey Jones unit, and a 65,000-lb. cast-lead evaporator is used for reclaiming sulfuric acid. 3 illustrations in the first reference and 2 in the second. M.W.

NAKAMURA, K., and OKAMURA, O. Report of an inspection of European and American pulp mills. J. Japan. Tech. Assoc. Pulp Paper Ind. 5, no. 6: 479-85 (November, 1951). [In Japanese]

A brief description is given of mill installations in the United States, Canada, and Sweden. 11 tables. E.G.S.

OYAMA, T. Report on observations in northern Europe. J. Japan. Tech. Assoc. Pulp Paper Ind. 5, no. 6: 454-62 (November, 1951). [In Japanese]

A summary is given of an inspection trip through a number of Swedish pulp and paper mills. 6 photographs. E.G.S.

PAPER INDUSTRY. Brunswick expands mill capacity. Paper Ind. 33, no. 12: 1433-7 (March, 1952); *cf.* B.I.P.C. 22: 424.

The description is similar to that given in the previous article. 9 illustrations. E.S.

PULP & PAPER. Am. Writing Paper Corp. consolidates—modernizes. Pulp & Paper 25, no. 5: 40, 42 (May, 1951).

The program of consolidation of operations and elimination of useless properties and modernization of the remaining six mills of the American Writing Paper Corp., Holyoke, Mass., is described. 6 illustrations. E.S.

PULP AND PAPER MAGAZINE OF CANADA. [Expansion at Howard Smith Paper Mills] Pulp Paper Mag. Can. 53, no. 2: 42-54 (February, 1952).

To commemorate the installation of a new No. 1 paper machine and a modern stock preparation system at the Cornwall mill, the following articles are presented: Anon. Howard Smith's new No. 1 machine, p. 42-4; Anon. 40 years of astonishing growth have marked the Howard Smith enterprises, p. 45-6; Young, W. H. No. 1 paper machine and stock preparation system, p. 47-9 (also in Paper Mill News 75, no. 13: 10-12-14 [March 29, 1952]; Can. Pulp Paper Ind. 5, no. 4: 127-8, 130 [April, 1952]); Lear, H. Drying and condensate system, p. 49-51 (also in Paper Mill News 75, no. 13: 14, 16 [March 29, 1952]; Can. Pulp Paper Ind. 5, no. 4: 132 [April, 1952]); vanBeek, G. No. 10 boiler and auxiliaries, p. 52-4 (also in Paper Mill News 75, no. 13: 16, 18-19 [March 29, 1952]); and Anon. Other items of the expansion, p. 54. Numerous illustrations. M.W.

PAPER BREAKS

COWIE, J. C. Automatic sweat dryer doctor (second prize, gadget competition winners). Pulp Paper Mag. Can. 53, no. 3: 148 (Convention, 1952).

A break detector is described which automatically closes the sweat-drier doctor by means of a solenoid air valve to prevent the sheet from wrapping around the sweat drier or going back over the felt when a break or snap-off occurs. When the sheet is again on the reel, the air valves unload to open position. 1 diagram. E.S.

PAPER FINISH

ANON. The A B C of paper and boards. Papetier 5, no. 11: 59, 61, 63; no. 12: 31, 33 (November, December, 1951). [In French] *cf.* B.I.P.C. 22: 345.

The articles deal with grained papers (laid lines produced by the laid wires and chain lines by the chain wires, the dandy roll for marking the continuous paper web, various grains in the surface of the paper obtained by wires, the mesh of the felt or other fabrics, and embossing rolls); machine-made deckle edging; genuine, impressed, and imitation watermarks; ruling; the correct direction of the laid lines in the cut sheets; and the difficulties, resulting from different paper-machine widths, in cutting the different ream sizes in the most economical manner and correct grain direction without waste. E.S.

PAPER MANUFACTURE

CRAIG, F. A. Practical paper making. No. 11. The chemistry of paper making. Paper & Print 25, no. 1: 61-2, 64, 66, 69-70 (Spring, 1952); *cf.* B.I.P.C. 22: 412.

The author describes the chemical and physical processes and measurements which are involved in water purification, testing of fibrous raw materials, the cooking process, soda recovery, bleaching, chlorine removal, engine sizing, pH control, and sizing tests. 2 illustrations. M.W.

PAPER SPECIALTIES

ANON. It's in the cards. Monsanto Mag. 31, no. 1: 14-17 (March, 1952).

The various aspects of the greeting-card business, including designing, printing, assembling, and selling, as carried out by the Gibson Art Co., Cincinnati, are described. 9 illustrations. M.W.

ANON. New paper used for fish. Pulp & Paper 26, no. 3: 76 (March, 1952).

Perforated paper liners for the wire baskets in which tuna are precooked before canning are among the important postwar developments in fish-packing techniques. The liners are made of heavy kraft wet-strength paper. 1 illustration. M.W.

E. L. The manufacture of transfer paper for hot die stamping. Allg. Papier-Rundschau no. 1: 20 (Jan. 12, 1952). [In German]

Hot die-stamping transfer paper is principally used in the textile industry and serves for marking the goods with letters, signs, trademarks, or figures. The base paper is usually a tissue paper which is coated with a special emulsion which acts as a binder for the transferable bronze-powder or pigment film. Under the influence of heat (ordinary flatiron, heated cylinders, or heated embossing dies), the emulsion loses its binding properties and the bronze-powder film adheres to the article to be marked; the formulations of the emulsion and bronze powders (or pigments) vary slightly, depending upon the types of textiles to which the films are transferred. E.S.

EYSSEN, GEO. R. The lamination of foils upon printing machines. Neue Verpackung 5, no. 1: 3-5; no. 2: 33-5 (January, February, 1952). [In German]

The author discusses the possibilities for printing and laminating in one operation cellulosic or plastics films with metallic foils or different types of paper. The selection of suitable films and adhesives (including waxes), the correct combination of materials to be laminated, and printing and drying processes are outlined. 3 diagrams. E.S.

KAISER ALUMINUM & CHEMICAL CORPORATION. *Division of Metallurgical Research.* Inhibitive slip-sheets. Modern Packaging 25, no. 7: 220-1 (March, 1952).

A method of preventing water-condensation stains on aluminum flat-sheet products during storage consists in the use of sodium chromate-impregnated interleaving paper between the aluminum panels; it has proved to be highly effective in accelerated storage tests. 4 illustrations. M.W.

PAPER SALES. What's new for '52. Paper Sales 12, no. 3: 13-17, 40-2, 44, 46, 48 (March, 1952); *cf.* B.I.P.C. 21: 570.

Brief descriptions of several new papers and paper products are presented, including adhesive-backed shelf edging, asphalt-free waterproof tape, Christmas gift wrappings, corrugated French wrapping, fluorescent gummed specialties, flap and label moisteners, masking board, produce prepackaging trays, sandwich bag packages, shelf lining paper, and many others. 27 illustrations. M.W.

UNION BAG & PAPER CORPORATION. Processing kraft for new products at Union Bag. Southern Pulp Paper Manuf. 15, no. 3: 32 (March, 1952).

In the Paper Processing Department of Union Bag regular kraft paper is treated to meet specialized needs. Nine different types of processed paper, including creped kraft, coated paper, and various laminates such as "Scutan," an asphalt-laminated paper, are manufactured. 2 illustrations. M.W.

PAPER STORING

MILLER, IVAN C. Proper storage of your stock averts line headaches. Food Eng. 24, no. 3: 80-2 (March, 1952).

The author outlines the proper storage conditions for various types of packaging materials including cellophane sheets, rolls, and bags; plain and waxed glassine; Pliofilm; cartons and corrugated boxes, labels and gummed tapes; and crowns and closures. 1 table and 1 diagram. M.W.

PHOTO-ELECTRIC CELL

GAUT, MARCEL. The photoelectric cell in the paper industry. Rev. papiers et cartons 14, no. 21: 653-4 (Dec. 1, 1951). [In French]

Following a brief outline of the principles of photoelectric cells, an application on the paper machine and its mode of operation are described. Whenever a paper break occurs in the drier section, a photoelectric cell activates a cutter which will sever the pulp sheet at the end of the Fourdrinier wire. 1 diagram. E.S.

PHYSICAL TESTING—INK

CHR. HOSTMANN-STEINBERG'SCHE FARBENFABRIKEN, *Celle, Germany.* Printing-ink vehicles under the microscope. Allg. Papier-Rundschau no. 4: 154-5 (Feb. 25, 1952). [In German]

The selection of the proper vehicle for a printing ink will vary according to the furnish, beating, and sizing of the paper with which it will be employed. A simple method for predicting the tack of a vehicle is presented. When a drop of an ink varnish is brought between two glass plates, which are then separated rapidly, characteristic structures are formed, depending upon the viscosity of the oil, and which will give an indication of the pull exerted on the paper surface. Three photomicrographs of different varnishes

are presented. A watery linseed oil produces a rather flat, compact structure mostly in the center of the circle and with wide arms; a weak linseed-oil vehicle (short inks) produces a much more pronounced structure distributed over the entire circle, although the arms in the center are thicker than near the edges; a strong linseed-oil varnish produces a uniform pattern over the entire circle, which gives a good illustration of the stresses the paper is expected to withstand with long, tacky inks. Probably no paper would resist the tack of this third varnish without tearing. In practice, the varnishes of ink formulations are made in a range of different viscosities, so that their tack may be adjusted to the characteristics of the different paper surfaces. 6 figures. E.S.

MILL, C. C. Printing inks. Chemistry & Industry no. 8: 156-9 (Feb. 23, 1952).

The author discusses the application and rheology of printing inks, the interpretation of rheological data, and the use of rheological measurements for predicting ink performance. Other factors which are concerned in the use of printing inks (e.g., surface tension) are mentioned briefly. 4 figures and 12 references. M.W.

PACKAGING INSTITUTE. Three proposed Packaging Institute tests for printed packaging materials. Am. Boxmaker 41, no. 3: 22-5 (March, 1952); Am. Paper Converter 26, no. 3: 12-13, 60, 62, 74-5 (March, 1952); Packaging Parade 20, no. 230: 180-5 (March, 1952); Southern Pulp Paper Manuf. 15, no. 4: 60, 62-4, 66 (April, 1952); Modern Packaging 25, no. 8: 134-7, 188, 190 (April, 1952); Modern Lithography 20, no. 3: 38-40 (March, 1952).

The following tests for use with lithographed or printed packaging materials have been proposed: PI Printing 1p-51, proposed test for effect of alkali on various types of printed packaging materials; PI Printing 2p-51, proposed method of testing packaging materials for fastness to light by the use of the Fade-Ometer; and PI Printing 3p-51, testing resistance of ink on printed packaging materials to the product in the package. With the exception of the last reference (which describes only the first two methods), the text of the three procedures is presented. 1 table in the first five references, 5 illustrations in the fifth, and 1 illustration in the last reference. M.W.

PHYSICAL TESTING—MOISTURE

MORRISON, J. A. S. Relative humidity—and its measurement in the litho machine room. Brit. Printer 64, no. 383: 29-31 (March-April, 1952).

Because paper which has absorbed moisture to reach equilibrium with the atmosphere has a slightly lower moisture content than paper which loses moisture to reach equilibrium, register troubles are more effectively avoided by using paper which is conditioned when delivered to the printer, rather than after it reaches the printing plant. A hair hygrometer, if adjusted accurately, can be utilized in determining the moisture content of paper; the sword hygroscope developed by the Lithographic Technical Foundation is an example of a hair hygrometer which records the degree of variation of the moisture content of paper from the room atmosphere. An instrument developed in England, the Gregory hygrometer, has as its sensitive element a fabric impregnated with chemicals which are capable of absorbing or giving off moisture to attain equilibrium with the atmosphere. The amount of moisture it contains governs its electrical resistance, and a measurement

of the current which can be passed through it provides a direct reading of relative humidity. 3 illustrations. M.W.

PHYSICAL TESTING—PAPER—PRINTABILITY

GLASSMAN, ALEX. A suggested method for the routine determination of newsprint printability. Pulp Paper Mag. Can. 53, no. 3: 178-86 (Convention, 1952).

A routine control method for the assessment of the printing quality of newsprint directly at the paper machine is described; it is based on the work of Bardsley and Morin (*cf.* B.I.P.C. 17: 511-12) in which they modified Carlsson's technique (*cf.* B.I.P.C. 10: 303) for routine testing. The details of the technique and equipment are outlined, as well as the difficulties which were encountered. Practical examples are given of the use of printability control in machine-room operation. 8 tables, 14 figures, and 5 references. E.S.

PHYSICAL TESTING—PAPER—SIZE RESISTANCE

ANON. A new waterproofness tester. Wochbl. Papierfabr. 80, no. 3: 74 (Feb. 15, 1952). [In German]

An instrument is described in which eight samples (paper, board, or textiles) may be tested simultaneously for their waterproofness. The samples with a surface of 50 sq. cm. are clamped into the eight individual testing compartments, and water is admitted and held automatically under constant pressure. The point- or sheetlike penetration of the liquid through the samples is observed at hourly intervals for 24 hours, after which period the test is usually terminated. Any material through which the water did not penetrate for 24 hours is considered to be waterproof. The samples may also be dusted with a dry indicator powder after clamping. For the testing of very thin papers, the clamping devices may be provided with glass inserts upon which the specimens rest to prevent any bursting stress on the samples. 1 figure. E.S.

PHYSICAL TESTING—PULP—FREENESS

LHOMME, H. The status of standardization in French pulp and paper testing. Papeterie 74, no. 1: 11, 13, 15 (January, 1952). [In French]

The newly formed French pulp and paper association (A.T.I.P.) has appointed a subcommittee under the chairmanship of Vilars, which has taken over the work of a previous, now defunct standardization committee and is studying the TAPPI methods to adopt or modify those which apply to French conditions. The first new standard (NF Q 50-300) deals with the drainage test and supersedes the now obsolete "beating degree" (freeness) test. Certain modifications in the wire screen (from rectangular to square meshes) are incorporated. It is important that the calibration of the drainage tester be carried out with distilled water at 20°C.; data are included to show the variations resulting from the use of other temperatures. The actual drainage tests will be made at the temperatures of the pulp suspensions to be examined, employing the standard correction diagrams supplied by the manufacturers of the instrument. The calibration, however, must be made at the specified temperature. 1 table. E.S.

PHYSICAL TESTING—PULP—WET STRENGTH

LANGINS, E. Pulp studies using the wet web tensile strength tester. Pulp Paper Mag. Can. 53, no. 3: 163-70 (Convention, 1952).

Moisture and basis-weight curves have been prepared and standard conditions selected to permit the use of the Brecht initial wet-strength tester (*cf.* B.I.P.C. 17: 574-5; 20: 31) for pulp studies. The effect of such variables as the age and the temperature of the stock was studied, and the precision of the test method determined. A comparison with the results of dry-strength tests showed that the wet tensile strength gives more useful information about the paper web strength than dry tests. It was compared with the rate of breaking at the couch. The relationship was found to be more apparent with a modern high-speed machine than with slower machines. The effect on wet strength of adding sulfite pulps of various chlorine numbers, broke stock, and Haug refiner stock to groundwood was determined. The influence of beating is discussed. The wet tensile strengths of pulps containing various percentages of different types of long fibers and fines were determined. The proportion of long fibers and fines giving the maximum wet tensile strengths was determined, and the quality of the different types of fiber fractions is discussed from the viewpoint of the papermaker. 4 tables, 16 figures, and 10 references. E.S.

PHYSICAL TESTING—WAX

FARNHAM, H. M., HERBST, W. A., and HITCHCOX, H. F. New blocking-point test. Modern Packaging 25, no. 7: 257-60 (March, 1952).

A method for evaluating the blocking point of paraffin waxes in a single operation with one sample is described. It employs a metal plate, which has an imposed temperature gradient over its entire length, on which a folded, waxed paper strip is placed. After a seven-hour test period, the strip is removed, and the point at which blocking begins is observed. Normally a sharp demarcation exists between the blocked and nonblocked areas. The distance from the point of blocking to the end of the strip is converted to blocking temperature by using a temperature calibration curve for the plate. In this method, a dozen or more waxes may be determined simultaneously with one blocking apparatus, and inspection time is reduced to a minimum. The reproducibility is ±2°F. in most cases. 2 tables and 4 figures. M.W.

PLASTIC FILMS (NONCELLULOSIC)

HERRMANN, OTTO. Plastic foils for packaging and similar purposes. Kunststoffe 41, no. 12: 462-5 (December, 1951). [In German]

The characteristic properties of polyethylene, saran, Pliofilm, Luvitherm (a nonplasticized polyvinyl chloride), and Supronyl (polyamide) films are described and compared with each other, and their suitability for different packaging purposes is evaluated. Data on strength properties, possible range of temperatures at which they will perform satisfactorily, and vapor permeability are included. 4 tables and 2 diagrams. E.S.

PLASTICS—PAPER-BASE

THOMAS DE LA RUE & COMPANY, LTD. *Plastics Division,* Manufacture of laminates. Brit. Plastics 25, no. 273: 58-61 (February, 1952).

The processes and operations employed in the manufacture of decorative and industrial laminates are described. The company produces about 120 tons of laminate per week, 50 tons of which is the Formica grade of decorative laminate. In addition to about 60 different grades of varnish, approximately 80 tons of paper and 2.5 tons of fabric are used each week as fillers; the

various laminates are produced on 22 impregnating machines and eight multi-daylight presses. 13 illustrations. M.W.

PLYWOOD

ANON. Plyron; chemurgic surface for new plywood. Chemurgic Digest 11, no. 3: 7 (March, 1952).

A new panel material, Plyron, consists of a hardboard surface which gives the product a tough, wear-resistant, and easily paintable surface, and an inner plywood construction which provides strength, rigidity, and dimensional stability. It has been used successfully for table tops, cabinet doors, and flooring, and as forms for concrete. 4 illustrations. M.W.

PRINTING AND PRINTER'S INK

ANON. Steel-plate engravings, suitable papers and inks. Allg. Papier-Rundschau no. 3: 110-11 (Feb. 12, 1952). [In German]

Following a brief description of the plates or cylinders and the process employed in steel engraving, suitable inks, papers, and boards are discussed. Only high-class papers or boards made from long-fibered pulps should be used, which will not tear or break under the high-pressure printing stresses (higher than in any other printing process) to which the materials will be exposed. They should be well sized, tough, and elastic, and possess a firm structure. The printers frequently moisten the papers prior to use to improve their elasticity. The range of papers and boards employed is a fairly large one, including rag and linen papers and boards, handmade papers, Japanese papers, bank papers, opaline boards, parchment boards, ivory boards, and many others. E.S.

CALLAHAN, FRANCIS P., JR. Light scattering in halftone prints. J. Optical Soc. Am. 42, no. 2: 104-5 (February, 1952); *cf.* B.I.P.C. 22: 197.

Light scattering plays a part in determining the colors of a halftone print. By treating the print as a filter in contact with a scattering medium and ignoring second-order effects, approximate equations are derived which enable an upper limit to be set on the error resulting from the use of the Neugebauer equations in the usual way. The error is found to be no more important than the other errors associated with their use. 2 references. E.S.

YULE, J. A., and COLT, R. Colorimetric investigations in multicolor printing. Modern Lithography 20, no. 2: 41-3; no. 3: 43-4 (February, March, 1952); *cf.* B.I.P.C. 22: 197.

In the development of color correction methods for multicolor printing, an understanding of the relationship between the amount of ink used and the color produced is necessary. Two sets of equations have been proposed to express this relationship, but neither were found to represent the facts perfectly; this is partly due to the optical charactistics of the paper. Modifications are suggested which may be applied to the equations to improve the representation of the actual behavior of the inks. 3 tables and 1 figure. M.W.

PRODUCTIVITY

ANGLO-AMERICAN COUNCIL ON PRODUCTIVITY. What can we learn from America? J. Inst. Packaging no. 10: 4-6; discussion: 6-7, 22 (1950).

A report by the Specialist Team on Packaging which was sent on a

tour of the United States to investigate American packaging methods is presented. The principal differences in British and American practices are based on a greater supply of raw materials in the United States, the greater degree of emphasis on mechanization and standardization, and the general accessibility of information on packaging technology which characterizes the American industry. M.W.

MISSION PAPETIÈRE AUX U.S.A. American productivity. Papier, Carton et Cellulose no. 1: 25-54 (March-April, 1952). [In French] *(first number of a new French journal)*

The text of the report of the French productivity team for the pulp and paper industry is given; it consists of the following sections: Introduction, p. 25-6; Duret, J. Productivity in the pulp industry, p. 27-32; Bruggmann, H. Manufacture of paper and board, p. 33-9; Dumora, J. The factors which determine productivity in the finishing room (with particular reference to the operations of Hammermill Paper Co. at Erie, Pa.), p. 40-7; Saurac, S., and Brissier, M. Human relations, p. 48-51; and Brissier, M. Cost accounting, p. 51-2; Lescop, G. The organization of distribution, p. 52-3, and Brissier, M. Market research and publicity, p. 54 under the general heading of bookkeeping and commercial organization. Tabular data and numerous illustrations are included. E.S.

ZEYEN, ANDREAS. The Refa expert in the paper industry. Allg. Papier-Rundschau no. 3: 112-14 (Feb. 12, 1952). [In German] *cf.* B.I.P.C. 20: 797.

The possibilities for increasing the productivity of a mill with the assistance of Refa experts is discussed. The necessary qualifications of these experts are outlined and examples of their activities are given. Reference is made to the characteristics given by F. W. Shumard in his book "A primer of time study," McGraw-Hill, 1940. E.S.

PULP AND PAPER—IMPURITIES

FOSTER, J. The removal of dirt from unbleached sulphite pulp. Pulp Paper Mag. Can. 53, no. 3: 259-63 (Convention, 1952).

When sulfite pulp is prepared from small, knotty wood, the pulp from the digesters will contain fine specky dirt which, in the range of 0.03 to 0.4 sq. mm., is very difficult to remove. The various screening methods for this purpose were critically reviewed and compared, and high-consistency rotary screening was found to give the most efficient operation, although only a certain proportion of the fine specks can be removed by any one screening method. Retreatment in large Vortraps or Dirtecs will effect a further dirt reduction, depending upon consistency. The conclusion is drawn that the primary requirement for clean, unbleached sulfite pulp is good, clean wood. With dirty wood, it is easier to make bleached sulfite pulp. However, even with dirty wood, it is possible to make reasonably clean pulp by careful control and repeated treatments, without involving an extensive loss of fiber in tailings and an excessive, added cost. 4 tables, 2 figures, and 4 references. E.S.

OLSON, O. HARRY. Instrumentation studies. LXVIII. Evaluation of dirt in paper. I. Discussion of methods for speck counting and analysis. Tappi 35, no. 3: 148-9A (March, 1952); *cf.* B.I.P.C. 22: 427.

The present methods of evaluating paper are generally considered too subjective and inadequate. The purpose of the present study was the critical

evaluation of known and published existing methods; their underlying principles are discussed, and their application to a method is pointed out. Suggestions for further experimental work are given so that a sound basis for a more objective procedure may be obtained. 7 references. E.S.

PULP MANUFACTURE

R. L. K. Progress in pulp. Ind. Eng. Chem. 44, no. 3: 17A (March, 1952).

An abundance of forests and a favorable geographical arrangement of rivers contribute to making Sweden a leader in the wood pulp industry, but technical research and development are also important factors. Techniques have been developed in Sweden for the following processes: sealing the ends of aspen and birch logs to permit them to be flumed, the prehydrolysis of kraft pulp, chlorine dioxide bleaching, a semichemical process for the utilization of sawdust in the manufacture of insulation board, and the evaporation and burning of spent sulfite liquor. M.W.

PYRITES

SKOGMO, S. The application of sulfur and pyrites for the preparation of cooking acid. Norsk Skogind. 6, no. 1: 11-15, 17-21 (January, 1952). [In Norwegian; English summary]

The Norwegian sulfite mills consume approximately 19,000 tons of elemental sulfur and 80,000 tons of pyrites with a sulfur content of about 36,000 tons annually. Because of the present sulfur shortage and allocation, the mills which formerly used elemental sulfur have been forced to change to the roasting of pyrites. The principal methods, including flash roasting and the Fluo-Solids system, and roasting furnaces, and their advantages and prerequisites, are reviewed. 1 table, 7 figures, and 17 references. E.S.

RADIO

MINNESOTA AND ONTARIO PAPER COMPANY. Mando's FM radio serves company and nations. Pulp Paper Mag. Can. 53, no. 2: 80-1 (February, 1952).

Some incidents are related which illustrate the usefulness of the Company's high-frequency radio system which has been incorporated into the Civil Defense program of Minnesota and formally offered to Ontario authorities. M.W.

RAMIE

ALLISON, ROBERT V. Ramie comes to stay in Florida. Chemurgic Digest 11, no. 3: 14-16 (March, 1952).

Ramie, the strongest of the bast fibers, combs out to fiber lengths of about six inches; it is stretch and shrink resistant and moisture absorbent. There is a good possibility that it can be grown and processed in this country at a much lower price than cotton. The soils of the Florida Everglades region have been found to be suitable for its growth, and research is being carried out with different varieties to determine which will provide the highest yield. At present harvesting is accomplished with old hemp harvesters but new machinery is under development. Several spinning systems are already available in this country which can handle the fiber in its natural lengths. Its properties suggest a wide variety of uses, such as in clothing, ropes, marine packing, conveyor belts, and insulation for cables, etc. 7 illustrations. M.W.

RAW MATERIALS

FÉDÉRATION DES ASSOCIATIONS DE COMMUNES FORESTIÈRES FRANÇAISES. *Commission Technique.* The paper industry of tomorrow; new raw materials. Rev. papiers et cartons 15, no. 2: 41-50 (Jan. 15, 1952). [In French]

The replacement of rags by wood as the fibrous raw material in the pulp and paper industry is discussed, followed by the depletion of coniferous species in the French forests and recourse to Scandinavian imports. The fact is stressed that France still possesses abundant resources of cellulosic materials, including copsewood, reeds, cornstalks, and millet stalks (*Sorghum vulgare*) and that, in the national interest, the industry must develop processes for their utilization. 11 figures and 13 footnotes. E.S.

RAYON

ENTWISTLE, D. Rayon and other manufactured fibres—physics and chemistry. Rev. Textile Progress 2: 63-79 (1950); *cf.* B.I.P.C. 21: 488.

The author reviews the research reported during 1949 and 1950 on rayon and synthetic fibers. 86 references. M.W.

RAYON—STATISTICS

TEXTILE OR'GANON. Cellulose consumption. Textile Or'ganon 23, no. 3: 71-3 (March, 1952); *cf.* B.I.P.C. 21: 578.

Cellulose consumption by the U. S. rayon- and acetate-producing industries reached a new high of 616,300 tons in 1951, an increase of 4.5% over 1950. The consumption of dissolving pulp was 13% greater than that of the previous year, whereas the usage of cotton linters declined by 25%. Of the total cellulose used in the rayon processes (viscose and cuprammonium), 88% was from wood pulp and 12% from cotton linters; the corresponding figures for the acetate industry were 71 and 29%, respectively. The new supply of dissolving and special chemical grades of wood pulp amounted to 815,890 tons in 1951, 63% of which was consumed by the rayon and acetate industries. These industries consumed approximately 54% of the estimated total of 187,956 short tons of cotton linters pulp produced in 1951. 1 table and 1 graph. M.W.

RAYON—VISCOSE PROCESS

HAAS, H., BATTENBERG, E., and TEVES, D. The characteristics of wood pulps for use in the manufacture of viscose. Tappi 35, no. 3: 116-24 (March, 1952).

There are significant differences in the characteristics of dissolving (I) and paper pulps (II); (II) may still contain a considerable amount of noncellulosic constituents of the wood, whereas for (I) purity is the most important requirement. The authors discuss the reasons for, the extent of, and the methods employed for the removal of these noncellulosic substances in the manufacture of (I). Lignin is the only component in wood which must be removed for both (I) and (II). The third largest constituent, the hemicelluloses, must be eliminated from (I) because they do not contribute to the strength of the finished rayon and cause considerable difficulties during xanthation. The reactions of the various pulping and dissolving agents are discussed, with particular reference to the filtering properties of the viscose solution. Oxycelluloses formed during bleaching and an excess of pitch will

also cause troubles and have to be removed; the ash content must be held to a minimum since it may cause serious difficulties during spinning operations. In conclusion, viscosity as an important characteristic of (I) receives consideration. It is generally assumed that a good quality of rayon should be as uniform in molecular weight as possible and that rayon pulps should have a narrow molecular-weight distribution curve. However, it has not yet been proved that fibers of uniform molecular weight have better mechanical properties than others with a broader molecular-weight distribution. The authors present evidence from which it would seem that the molecular-weight distribution is not an important characteristic of viscose pulps which have to undergo alkaline aging. 1 table, 16 figures, and 14 references. E.S.

SIHTOLA, HANNES, and BOSTRÖM, BENGT. Investigations on the viscose process. I. Influence of catalysts in the ageing of alkali cellulose. Paper and Timber (Finland) 34, no. 2: 23-7 (February, 1952). [In English]

The possibilities of substituting catalysts for the aging stage in the viscose process were investigated. The following results were obtained: In the autoxidation of alkali cellulose, cobalt acts as a pure catalyst. Its influence is exactly the same as that of heat, and the shape of the viscosity curve is not changed in any way. With reference to their catalytic influence, metals can be divided into three groups: positive catalysts, inactive metals, and inhibitors. Positive catalysts in general include metals in the form of cations with more than one valence (cobalt, manganese, iron, tin, nickel, and chromium), among which cobalt exerts the most pronounced influence. Metals with only one valence are inactive. Lead, copper, bismuth, and antimony act as inhibitors. Certain metals, manganese for instance, are inactive or have a negative influence when used in large quantities, whereas they have a distinctly positive influence when added in small quantities. The effect of catalysts seems to be more pronounced when the pulp is soaked with the catalyst before steeping than when it is added to the steeping liquor. By the use of catalysts the aging of alkali cellulose in the viscose process may be considerably shortened or omitted altogether. In the latter case, however, viscoses with adequate filtering properties are obtained only when the pulp is soaked with the catalyst before steeping. 10 tables, 2 figures, and 22 references. E.S.

RESEARCH

THIESMEYER, LINCOLN R. Research and pulpwood production. Pulp Paper Mag. Can. 53, no. 4: 132-4, 137-8 (March, 1952); Paper Trade J. 134, no. 11: 22, 24, 26, 28 (March 14, 1952).

The author summarizes some of the results of research in the general field of applied science and points out various ways in which a broader application of scientific and engineering knowledge may be made to pulpwood operations. M.W.

RESIN, SYNTHETIC

PATTERSON, D. G., DETWILER, E. B., and SUEN, T. J. Resins as finishing agents. Modern Plastics 29, no. 7: 151-2, 154, 156, 158, 160, 162, 164, 270, 272, 275 (March, 1952).

The authors describe the use of urea- and melamine-formaldehyde resins in improving the quality of properties of paper, textiles, and leather, in moistureproofing of cellophane, in improving the water resistance of starch, and in resin-pulp aggregates. A survey of the water-soluble urea and melamine resins which are now available is included. 9 figures and 114 references. M.W.

SAFETY

Gayner, E. J. Fundamentals of an effective safety program. Southern Pulp Paper Manuf. 15, no. 3: 96-7 (March, 1952).

Some basic principles to follow in the establishment of an industrial safety program are outlined. M.W.

SCIENTIFIC WORKERS

Murphy, Walter J. Scientific and technical manpower problems. Tappi 35, no. 3: 38A, 40A, 42A, 44A, 46A (March, 1952); Paper Mill News 75, no. 8: 124 (Feb. 23, 1952). [Abridgment]

The author discusses the reasons for the present shortage of scientific and technical manpower and means for the correction of this situation. E.S.

SEMI-CHEMICAL PULPING PROCESS

Anon. High yield pulp production with Sprout-Waldron 36-2 refiner—. Paper Mill News 75, no. 12: 99 (March 22, 1952); *cf.* B.I.P.C. 21: 629; 22: 23.

The development of the modern disk pulp refiner made possible the current high yield of semichemical pulps. Current trends in semichemical pulping are: a continued expansion in the production of unbleached pulp for .009 corrugating; a moderate expansion in the production of high-quality unbleached pulp; and a rapid increase in the production of bleached pulp for a wide variety of printing and writing grades. The function of the Sprout-Waldron refiner in the high-yield kraft pulping process is summarized. 3 illustrations. M.W.

Bouchayer, H. Semichemical pulps and their utilization in the paper industry. Rev. papiers et cartons 14, no. 22: 687-90 (Dec. 15, 1951). [In French]

The author describes the cooking, refining, and bleaching of semichemical pulps, suitable wood species, applications, the units required for their manufacture, and how they can be integrated into existing mills. E.S.

Sutherland, Lionel M. Sutherland high yield kraft system. Paper Mill News 75, no. 12: 66 (March 22, 1952); *cf.* B.I.P.C. 21: 579-80.

Current yields of pulp which is produced by the high-yield process average approximately 62% for Northern kraft and from 56 to 60% for Southern kraft, at a production rate of over 2000 tons per day. Principal changes in pulp-mill operation include a 15% loss in the capacity of vacuum washers, the need for more frequent evaporator boil-outs, and an increase in power consumption of 1.5 to 2.5-h.p. days as yields of 60% are approached. Wood consumption is reduced by 20 to 25% with corresponding reductions in labor, steam, and chemicals. The quality of the linerboard produced by this process readily meets industry standards, and the high-yield pulps are believed suitable for most grades of paper. The system is described, and the effect of hot-stock refining on pulp is discussed. M.W.

SETUP BOXES

Fra. Calculations for cardboard boxes. (XIII). Allg. Papier-Rundschau no. 1: 7-9 (Jan. 12, 1952). [In German] *cf.* B.I.P.C. 22: 434.

A sample calculation is given of the cost (in Germany) of a hinged, velvet-covered jewelry box; the use of acid- and alkali-free raw materials, adhesives in particular, is an essential prerequisite. 2 tables and 1 illustration. E.S.

SHIPPING CONTAINERS

ANON. Glued-joint shippers. Modern Packaging 25, no. 7: 244-6, 408 (March, 1952).

There are several indications that the glued-lap manufacturer's joints will be widely adopted by users of corrugated shipping containers. Preliminary tests have shown that glue produces a strong, effective joint that is equal or superior to stitched or taped joints. However, boxes with glued joints have not been in use long enough to determine their effectiveness in long-term storage and use or their behavior under conditions of rough handling or atmospheric extremes. Since taped and stitched joints are satisfactory for their respective applications, their replacement with the glued types will have to provide some decided advantage. They will find many applications, however, because they will probably be more economical; they are especially successful for the manufacture of small corrugated boxes. The Freight Classification Committee is expected to publish a rule governing the use of glued joints in containers for railroad shipments, and similar government action may be forthcoming for military shipments. The process of manufacture of glued joints and the selection of adhesives are described. 3 illustrations. M.W.

ANON. How British packer protects television tubes. Packaging Parade 20, no. 230: 171 (March, 1952).

A protective shipping case for television tubes consists of an open tube which is scored and die-cut so that, by twisting it, a cradle for holding the tube is formed, a top pad that can be lifted off for inspection and which so braces the end of the case that it can be glued shut, and a single-wall outer box. A nonabrasive cellulose pad protects the face of the tube from scratches. This arrangement has been found to give adequate protection; the carton achieves its strength through structure rather than through weight of the packaging materials. 3 illustrations. M.W.

SHIPPING CONTAINERS—TESTING

SARGEANT, J. A. Electronic shock-tester. Modern Packaging 25, no. 7: 261-3 (March, 1952).

An electronic device for recording shocks and vibrations to which the contents of a container are subject is described (*cf.* B.I.P.C. *22*: 202). The device was developed by the Packaging and Development Branch of the Engineer Research & Development Laboratories, which is also sponsoring projects for the collection of data and information on ride characteristics of common carriers and for the co-ordination of information on shock and vibration instrumentation available or adaptable to the packaging engineer's requirements. 4 illustrations. M.W.

SLIME PREVENTION

PAPER MILL NEWS. [Slime control] Paper Mill News 75, no. 11: 10-12, 14, 18, 22, 24 (March 15, 1952).

The problem of slime control is discussed in the following articles: Buckman Laboratories, Inc. Efficient slime control, p. 10-11; Martin, R. B. Effective slime control, p. 11; Kipp, Robert. One way to control slime: regular cleaning, p. 12; W. A. Cleary Corporation. Slime at high temperatures, p. 14,

24; General Dyestuff Corporation. Balanced slime control, p. 18; R. T. Vanderbilt Co. Merfenel reduces slimicide costs, p. 18; National Aluminate Corporation. Nalco system of slime control, p. 22; Gallawhur Chemical Corporation. Mersynate a new slimicide, p. 22; and Stroemple, C. J. Pittchlor for slime control in paper mills, p. 24. M.W.

SORBITOL

ANON. Sorbitol hits a high stride. Chem. Eng. 59, no. 3: 215, 217, 219-20, 222 (March, 1952).

The recent developments and expanding range of uses for sorbitol are described, and the process used by Atlas Powder Co. for its manufacture is outlined. Among the newer applications for sorbitol are its use as a humectant in the paper field, for cellulose sponges and bottle seals, cork compositions, gaskets, adhesives, printers supplies, etc. 3 illustrations and 1 flowsheet. M.W.

SPECIFICATIONS

THE JEROME F. GOULD CORPORATION, *Brooklyn, N. Y.* Civil defense first aid kit developed from proved packaging techniques. Packaging Parade 20, no. 230: 102, 104-6 (March, 1952).

A complete set of packaging and packing specifications for a civilian defense first-aid kit has been prepared by the company for the Federal Civil Defense Administration. Some examples of the specifications are given. 4 illustrations. M.W.

STEVENSON, ALBERT F. Tips on ordering materials for top performance. Food Eng. 24, no. 3: 78-9 (March, 1952).

Specifications should be drafted to provide protection of products and economical production-line performance, and they should be worked out cooperatively between the supplier and the user, so that maximum production efficiency can be attained in both plants. Some general specifications which affect production-line performance for metal cans, glass containers, and flexible materials are discussed. 1 illustration. M.W.

STARCH

PEAT, STANLEY, PIRT, S. J., and WHELAN, W. J. Enzymic synthesis and degradation of starch. Part XV. β-Amylase and the constitution of amylose. J. Chem. Soc.: 705-13 (February, 1952); *cf.* B.I.P.C. 21: 874.

The action of Balls' crystalline β-amylase is shown to be different from that of amorphous preparations of β-amylase, inasmuch as it converts potato amylose to the extent of only 70% into maltose. Evidence is presented that a standard preparation of β-amylase from soybeans contains, in addition to true β-amylase, an enzyme (Z-enzyme) which supplements the β-amylase in effecting the complete conversion of amylose into maltose. It appears that some degree of branching occurs in potato amylose and that this branching impedes the progress of β-amylolysis. The branch links of amylose are different from the α-1,6-links of amylopectin and are specifically attacked by Z-enzyme which is without action on the amylopectin branch links. At pH 3.6 the action of Z-enzyme is inhibited. 14 tables and 2 figures. E.S.

PEAT, STANLEY, PIRT, S. J., and WHELAN, W. J. The enzymic synthesis and degradation of starch. Part XVI. The purification

and properties of the β-amylase of soya bean. J. Chem. Soc: 714-22 (February, 1952).

A method is described for the purification of β-amylase from soybeans, the product of which is amorphous but is virtually free from Z-enzyme as well as from α-amylase and maltase. The elimination of Z-enzyme has been studied in detail, and it is shown that for the structural analysis of amylaceous polysaccharides the purified soybean β-amylase is exactly equivalent to the crystalline enzyme of sweet potato. It is established that the amyloses of sago, tapioca, and maize are branched in the same way as potato amylose, and that the branch points are attacked by Z-enzyme. 9 tables and 5 figures. E.S.

PEAT, STANLEY, THOMAS, GWEN J., and WHELAN, W. J. The enzymic synthesis and degradation of starch. Part XVII. Z-enzyme. J. Chem. Soc.: 722-33 (February, 1952).

Z-Enzyme, which supplements the action of β-amylase or phosphorylase on amylose, has been isolated from the soybean as a freeze-dried powder free from α- and β-amylases. Its function is the hydrolysis of the limited number of branch links in amylose which act as barriers to β-amylosis or phosphorolysis. Z-Enzyme is shown to be a β-glucosidase, and its action on amylose is simulated by the β-glucosidase of sweet almonds. The form of the β-glucosidic links in amylose is discussed. 13 tables and 2 figures. E.S.

STATIC ELECTRICITY IN PAPER

SRIKANTAN, D. L. Static electricity in paper on the paper machine. Indian Pulp and Paper 6, no. 6: 281 (December, 1951).

The author enumerates the causes for static electricity accumulation in paper during its manufacture and suggests some preventive measures. M.W.

STEAM POWER

MYERS, DAVID MOFFAT. The human factor. Paper Ind. 33, no. 12: 1432 (March, 1952); *cf.* B.I.P.C. 22: 492.

After the power plant has been installed, its operating efficiency depends upon the efficiency of the men who run it. To establish a standard for the best possible performance of an existing plant, the most efficient heat balance which can be attained with the available units should be determined and compared with actual operation. Losses which account for differences must be analyzed and the proper steps for their correction taken. Close co-operation between departments, management, and operatives is essential. A system of awards, prizes, or bonuses for the maintenance of interest in an efficient operation has proved highly beneficial to all concerned. E.S.

STEAM TURBINES

JANSON, H. A. Back-pressure power and the STAL double-rotation turbine. Pulp Paper Mag. Can. 53, no. 3: 230-6 (Convention, 1952); Paper Trade J. 134, no. 16: 22, 24, 26, 28, 30, 32 (April 18, 1952); *cf.* B.I.P.C. 9: 270.

The application of back-pressure steam power to pulp and paper mill operation is discussed, with particular reference to the construction and advantages of the STAL double-rotation condensing turbine. Its mode of operation is distinct from all other turbines; it is a radial-flow machine which utilizes the reaction principle. The blades are fixed in rings which are secured alternately to each of the two turbine disks. The blade rings on one of the disks rotate in the space between the blade rings of the other disk; both disks ro-

tate at the same speed but in opposite directions, and the blades of one of the disks thus serve as the guide blades for the blades of the other. On account of this double rotation, the relative speed between the blades is twice as great as when stationary guide blades are used. Hence, the same heat drop can be utilized in a double-rotation turbine as in an ordinary reaction turbine having four times the number of expansion steps, other conditions being equal. STAL turbines can be started up very rapidly from cold and carry the full load. 15 figures. E.S.

STREAM POLLUTION

Murdock, Harold R. Pulp and paper industry. Ind. Eng. Chem. 44, no. 3: 507-13 (March, 1952).

The author reviews the recent legislation concerning stream pollution and some of the latest developments in the removal of suspended solvents, treatment of deinking waste, treatment of spent kraft liquors, and disposal methods for spent sulfite liquor, including references to salable products and heat and chemical recovery. 2 illustrations and 35 references. M.W.

Rudolfs, Willem, and Hanlon, W. D. Removal of color in wastes. Ind. Eng. Chem. 44, no. 3: 531-3 (March, 1952).

The color characteristics of industrial wastes depend on the light source, the degree of transmittance or reflectance by the wastes, and the color sensitivity of the observer. Light transmittance properties may be represented by transmittance curves or expressed as "dominant wave length," "luminance," and "purity." Paper mill wastes have nonselective light transmittance curves. The color intensity of rope, rag, and sulfite cooking liquor decreases with decreasing pH values, and hard water salts effect a color reduction with rag and rope cooking liquors. Aerobic and anaerobic biologic treatment increase the color intensity of rag cooking liquors and board mill white water but decrease the color intensity of jute cooking liquor wastes; aerobic treatment also increases the color intensity of sulfite cooking liquor. 1 table, 7 figures, and 3 references. M.W.

Southgate, B. A. Waste disposal in Britain. Ind. Eng. Chem. 44, no. 3: 524-30 (March, 1952).

Methods which have been developed in Great Britain for the treatment of sewage and industrial wastes, including the waste liquors from paper mills, are described. 5 tables, 3 figures, and 23 references. M.W.

SULFITE PROCESS

Bush, W. H., Walker, O. J., and Logan, K. C. Experimental cooking of high yield sulphite pulp. Pulp Paper Mag. Can. 53, no. 3: 286-90, 347 (Convention, 1952).

The influence of cooking variables on the yield of spruce sulfite pulp was studied in the high-yield range. It was found that the transition from a pulp to a relatively hard chip was sharp and occurred at a permanganate number of approximately 30. The highest screened yield obtained was 54%, with an additional 4% rejects, using an 8.5-hour cook, an acid of 10.5% total sulfur dioxide, and 110 p.s.i. pressure at a maximum temperature of 120°C. However, screened yields, almost as high, were obtained with other acids, temperatures, and pressures. It was concluded that the uniformity rather than the particular set of pulping conditions was more important in determining the maximum yield. The total yield appeared to depend mainly on the permanganate number. From analyses made during the progress of the cooks,

the equilibrium concentrations of sulfur dioxide at different temperatures and pressures were calculated and are presented graphically. 6 tables, 10 figures, and 7 references. E.S.

ORCHARD, W. M. Improvements in sulphite mill practice affecting sulphur conservation. Pulp Paper Mag. Can. 53, no. 2: 73-5 (February, 1952).

Since the theoretical amount of sulfur which is required to produce a ton of sulfite pulp has been calculated at about 170 to 180 lb., the actual average consumption of about 250 lb. of sulfur per ton of airdry pulp indicates the need for improved methods of sulfur conservation. Modern mills have reduced sulfur consumption through the use of an adequate volume of pressure acid storage with a pressure recovery tower to maintain a relatively uniform gas flow at a sulfur dioxide strength comparable to that of the burner gas. Other factors in sulfur conservation include a clean, low-moisture content sulfur supply, the lining of the rotary burner used for sulfur vaporization, temperature control of the vaporizer and an automatic secondary air control at its outlet, and the use of an adequate limestone tower system, the towers of which are kept free from sludge accumulation. Probably the most effective means of saving sulfur is adequate pressure reduction before blowing the digester to increase the amount of gas recovered. M.W.

SAVAGE, J. V. Sulphite pulps for a specialty mill. Paper Mill News 75, no. 12: 52 (March 22, 1952); Pulp & Paper 25, no. 9: 83 (August, 1951).

At the specialty mill of the Crown Zellerbach Corporation, over 600 grades of paper are made during the course of a year. This production requires 20 grades of pulp which vary in cooking and bleaching treatments. In order to utilize pulping equipment at its full capacity, a detailed schedule is required which indicates the exact time for starting a cook, when a grade change is to be started in the bleach plants, and the tonnage rate of production. M.W.

SULFITE PROCESS—AMMONIA BASE

PAPER INDUSTRY. Ammonia pulping report. Paper Ind. 33, no. 12: 1438-9 (March, 1952); *cf.* B.I.P.C. 22: 54, 205-6.

The development of the ammonia-base sulfite process in the United States is reviewed. Rayonier, Inc. was the first company to convert its sulfite mill at Shelton, Wash., to ammonia-base pulping in 1945; since then a number of other mills on the West Coast, in Wisconsin, or in the East have adopted the process or are experimenting with it. One of the important reasons for the change-over from calcium- to ammonia-base is the prevention of stream pollution; the conversion is relatively simple and requires little modification of existing equipment. The liquor is exceedingly corrosive on the conventional digester linings; however, these can be replaced gradually in a more or less normal replacement program. Work is in progress on the development of a suitable evaporator and heat-recovery furnace for the spent liquor. E.S.

SULFITE PROCESS—REDDENING OF PULP

SCHMIDT, ERWIN. The reddening of sulfite pulp and the sodium chloride reddening of glassine paper. Svensk Papperstidn. 55, no. 4: 134-8 (Feb. 29, 1952). [In German] *cf.* B.I.P.C. 20: 907-8.

Supplementing the investigations by Adler and Häggroth, the author describes the results of his own studies dating as far back as 1928, in which evidence is presented that reddening of unbleached sulfite pulps results from

small quantities of spent sulfite liquor (I) which are persistently retained by the pulp fibers, although they can be removed by prolonged washing with large quantities of preferably hot water. All reactions observed on pulps with reddening tendencies can also be obtained with (I). The troublesome reddening of glassine paper is discussed which may occur when the latter comes in contact with sodium chloride (salty foods). This defect takes place only with hard pulps (as used for glassine), never with soft pulps, and is enhanced by the use of sulfurous acid which is sometimes employed for bleaching glassine pulps. The sulfurous acid protects the (I) retained by the fibers from oxidation by air; in the presence of sodium chloride this protective action decreases, and oxidation and reddening can take place. Hence, glassine pulps should never receive an aftertreatment with sulfurous acid. The author also mentions the relationship between the reddening properties and the color of unbleached pulps, with particular reference to the role played by cymene. Pulps containing cymene, i.e., those cooked with acid containing cymene (fresh tower acid strengthened by noncooled waste gases from preceding cooks) are darker in color and have reddening tendencies. In conclusion, reference is made to the limitations of the cooking-degree test according to which chlorine water is poured over the pulp; the resulting reddening is an indication of (I) still present in the pulp and not of its content of insoluble lignin which has not been removed in the cooking process. 5 references.

E.S.

SULFITE WASTE LIQUOR

KLEINERT, TH., and FLORIANTSCHITSCH, MARIETTA. Spent beech sulfite liquors. Monatsh. 83, no. 1: 36-7 (Feb. 15, 1952). [In German]

Extraction of the foam of spent beech sulfite liquor (I) with ether gave a brownish-cream product containing 23-24% methoxyl. An attempt to precipitate organic compounds from (I) by using the method of Lackey and co-workers (*cf.* B.I.P.C. 20: 206-7) failed. However, on extraction with trichloroethylene in the presence of diatomaceous earth (2 g./l.), a small amount of a lemon-colored, water-soluble product with an aromatic odor was obtained. From the water-insoluble material a light-brown product with 21.4% methoxyl could be isolated. 4 references. F.E.B.

TALL OIL

GENERAL MILLS, INC. New tall oil rosin. Can. Chem. Processing 36, no. 2: 60-1 (February, 1952); Chem. Processing 15, no. 4: 20 (April, 1952).

A new tall oil rosin fraction, called Aliphat 45-A, has been developed which is similar in chemical composition and properties to its predecessor, Aliphat 45-B, but which eliminates the shipping problems involved with the latter. The new product forms a dry uniform solid after pouring into a container; it does not separate upon standing and may be shipped in fiber drums without danger of bleeding through. It may be easily broken up for use in varnishes, interior enamels, soaps, etc. 1 table. M.W.

HARVA, OLAVI. A spectrophotometric study of Finnish crystalline tall oil rosins. Paper and Timber (Finland) 34, no. 2: 31-4 (February, 1952). [In English]

From ultraviolet absorption curves it has been found that Finnish crystalline tall oil rosins (I) contain 29-43% abietic acid; they do not contain any other acids of the abietic type. The occurrence of slight inflections in the absorption curves at 268 and 276 mμ seems to indicate the presence of de-

hydroabietic acid in (I). Fractional crystallization increases to some extent the abietic acid content of (I), but even the small amounts which remain after several crystallizations do not contain more abietic acid than isomerized gum or wood rosin. Although the prevailing opinion is that the tall oils from Northern and Southern Finland differ somewhat in composition, the abietic acid contents of (I) from the three different sources studied did not differ very much after fractional crystallization. 2 tables, 3 figures, and 17 references. E.S.

TURPENTINE

ENKVIST, TERJE, and ILVESSALO, MARJA-SISKO. The polymerization of sulfate turpentine for the manufacture of lubricating oils. Paper and Timber (Finland) 34, no. 1: 5-8, 10; no. 2: 34-9 (January, February, 1952). [In Swedish; English summary]

During the difficult period from 1943 to 1947 about 1700 tons of lubricating oil were manufactured in Finland by the polymerization of sulfate turpentine. Laboratory experiments had shown that the process can be carried out at about 135-175°C., using as catalysts aluminum chloride, fuller's earth, or aluminum silicate in amounts of about 2.5-5% of the turpentine. Crude turpentine must be distilled before polymerization. The carene fraction gives almost as good a yield as the α-pinene fraction. The entire main fraction of turpentine within the boiling range of 150-200° should be used to obtain the best yield. The lubricating oil has a rather high iodine number of 60-80 and slight drying properties. These drawbacks can be avoided by heating the reaction mixture to about 215-300° after polymerization, thereby reducing the iodine number to less than 20. The polymerization can be carried out at atmospheric or superatmospheric pressures; in the second case smaller amounts of catalyst are needed. The yield of lubricating oil amounts to about 55-67% of the distilled turpentine; in addition, about 22-35% of a light oil is obtained which consists principally of cymene and saturated and unsaturated alicyclic hydrocarbons. 9 tables, 4 figures, and 17 references. E.S.

VANILLIN

KRATZL, K., and KVASNICKA, E. The chemistry of vanillin and its derivatives. I. Alkyl amides of various aromatic acids, particularly of vanillic acid. Monatsh. 83, no. 1: 18-23 (Feb. 15, 1952). [In German]

The authors have prepared several amides of vanillic acid, their acetyl and carbethoxy derivatives, and a few of its related acids as a start in their studies on the derivatives of vanillin with pharmacological properties. Acetyl or carbethoxy acid chlorides were condensed with the appropriate amine to give the amide. Phenolic acid amides were obtained by partially hydrolyzing the acetyl or carbethoxy groups with sodium hydroxide. 2 tables and 11 references. I.A.P.

PEARL, IRWIN A., and BARTON, JOHN S. Reactions of vanillin and its derived compounds. XIV. 2,4-Furanedicarboxylic acid from vanillin. J. Am. Chem. Soc. 74, no. 5: 1357 (March 5, 1952); *cf.* B.I.P.C. 22: 141.

Vanillin was treated with sodium chlorite in the presence of acetic acid at pH 3 at 45°C. for eight hours. The ether-soluble fraction of the reaction mixture was separated into bisulfite-, bicarbonate-, and alkali-soluble fractions and neutral material. The bisulfite-soluble fraction yielded crystals of 2,4-furanedicarboxylic acid, the preparation of which has been reported pre-

viously by treating methyl coumalate with potassium hydroxide. 1 table and 4 footnotes. M.W.

VISCOSITY

SWINDELLS, J. F., COE, J. R., JR., and GODFREY, T. B. Absolute viscosity of water at 20°C. J. Research Natl. Bur. Standards 48, no. 1: 1-31 (January, 1952).

An accurate knowledge of the viscosities of liquids in absolute units is of fundamental importance in many scientific fields. The measurement of these viscosities is almost universally based upon the absolute viscosity of water at 20°C. as a primary standard. During the past 50 years there has been an increasing need for a more accurate determination of this standard. Consequently, with the co-operation of the Society of Rheology and some financial assistance from the Chemical Foundation, this project was undertaken by the National Bureau of Standards and now has been completed. The determination was made by the method of capillary flow. By means of a calibrated injector, various known constant rates of flow were produced in capillaries of measured dimensions, and observations were made of the corresponding pressure drops through the capillaries. The effects of the ends of the capillaries were rendered negligible by the simultaneous treatment of data obtained with pairs of capillaries having essentially the same diameters but different lengths. The value found for the viscosity of water is 0.010019 poise as compared with 0.01005 poise, which has been generally accepted for the past 30 years. The estimated accuracy of the new determination is ±0.000003 poise. As a result of this work, beginning on July 1, 1952, the National Bureau of Standards is planning to use the value 0.01002 poise for the absolute viscosity of water at 20° as the basis for the calibration of viscometers and standard-sample oils. It is recommended that other laboratories adopt this value as the primary reference standard for comparative measurements of viscosity. 36 tables, 6 figures, and 28 references. E.S.

VULCANIZED FIBER

L. E. The manufacture of vulcanized fiber. Allg. Papier-Rundschau no. 4: 153 (Feb. 25, 1952). [In German]

The raw material, the parchmentizing process with zinc chloride, the winding procedure, and the applications of vulcanized fiber are described. For the manufacture of thin sheets, two other procedures are briefly mentioned; one employs also zinc chloride and produces continuous webs; the other uses sulfuric acid which, however, cannot be applied in the case of thicker boards, because it is very difficult or impossible to remove the acid by washing. E.S.

SCHOENEN, FRANZ. New fields of applications for vulcanized fiber. Kunststoffe 41, no. 12: 470-1 (December, 1951). [In German]

New uses include industrial handling equipment (boxes and carriages), grinding disks, and graphited vulcanized fiber for the packing of high-pressure valves; combined with synthetic resins in different proportions, several layers of the compound may be pressed into laminated products which are suitable for bushings, bearings, and cog wheels. Laminations with plywood and metals result in products of exceptionally high strength. Vulcanized fiber is a layer material with different strength properties in the three principal directions; this is counteracted in laminated products by placing the different layers crosswise. It is now possible to manufacture unstratified vulcanized fiber by the zinc chloride process in the form of ribbons, pipes, and rods; this

permits hitherto impossible applications (spinning cones, cylinders for spools, pegs for polishing optical instruments, etc.). 1 table. E.S.

WASTE PAPER

FORSYTHE, J. J. Current problems in waste paper usage for deinking mills. Paper Mill News 75, no. 12: 78, 82, 123 (March 22, 1952).

Operational difficulties which are caused by high groundwood content in waste paper, synthetic resin or latex binders for clay coatings, hot-melt bindery adhesives, and plastic coatings are discussed. Reference is also made to techniques of packing waste paper for the most efficient sorting. M.W.

KOTTE [HANS] The economical sorting of waste paper. Allg. Papier-Rundschau no. 3: 106-7 (Feb. 12, 1952). [In German]

Several systems for the sorting of waste paper are discussed. Tabular data are included which show the extent to which waste paper can be upgraded by careful sorting. 1 table and 2 figures. E.S.

WATER-MARKS

ANON. Printers' paper problems. XXVI. Watermarks and their uses. Indian Print & Paper 17, no. 69: 49 (October, 1951); *cf.* B.I.P.C. 22: 341.

The manufacture and correct positioning of watermarks on the paper web are described. A dandy roll made for any particular size of sheet with the watermark to appear in register will be of no use for any other size, as the circumference of the roll must correspond with the size of the sheet. When cheaper grades of paper are made, the expense of using different dandy rolls for each size is reduced by repeating the watermark design more frequently on the roll so that, whatever size is cut, either the whole or a good portion of the watermark will appear on each sheet. As far as the printer is concerned, the chief value of watermarked paper is the guarantee to his customers that the same grade of paper is regularly employed. E.S.

WHITE WATER

KAPLOVSKY, A. JOEL. Volatile acid production during digestion of several industrial wastes. Sewage Ind. Wastes 24, no. 2: 194-201 (February, 1952).

Paper-mill white water waste was included in a study of volatile acid production during the digestion of normal and overloaded seeded mixtures of industrial wastes of different compositions. Only acetic and butyric acids were found in the entire digestion of the white water. 2 tables, 6 figures, and 6 references. M.W.

PREFELLIX, P. C. The recovery of white water. Rev. papiers et cartons 15, no. 4: 115, 117-18; no. 5: 157, 159-60 (Feb. 15, March 1, 1952). [In French]

Following a brief discussion of the various amounts of water used for stock dilution, on the paper machine, and by the showers, the author outlines the types (lean or rich) of white water obtained from the Fourdrinier wire, the suction boxes, the wet and dry presses, and their most efficient re-use in the process. In conclusion, he describes the different types of savealls which

utilize the principles of either filtration, sedimentation, or flotation. 2 tables and 2 references. E.S.

WOOD

TAKAHASHI, S. Pulp resources in the forests of the United States. J. Japan. Tech. Assoc. Pulp Paper Ind. 5, no. 6: 524-36 (November, 1951). [In Japanese]

A detailed statistical summary is given of pulpwood production in the United States. Much of the data is presented in tabular form. E.G.S.

WOOD—DECAY

HÖPNER, THEODOR. Fungus damage on pulpwood. Das Papier 6, no. 3/4: 47-53 (February, 1952). [In German]

Following a brief review of some of the pertinent literature, the author describes the effects of brown rot (the individual species were not identified) on sprucewood and the resulting pulps. Photomicrographs are included which illustrate the distribution of the hyphae in the wood with preferential attack of the carbohydrate component, the plugging of cells, and the dissolution process in the individual fibers. The following four characteristics are listed for the identification of pulps which have been prepared from wood infected with brown rot: the presence of hyphae (which survive the cooking process) in the lumen of the fibers, of perforations in the fiber walls, of tracheids plugged with grainy resin, and of fibers filled with a dark-colored, gelatinous substance. The changes in the wood substance resulting from fungus attack were followed by determining the color, specific gravity, copper number, and alkali solubility of sound (I) and attacked (II) specimens. Pulp yields from (I) and (II) and the differences in the chemical and mechanical properties of both types are also recorded; the data are summarized in a table. 1 table, 15 photomicrographs, and 13 references. E.S.

WOOD—DENSITY

YLINEN, ARVO. The influence of the summerwood portion and the width of the annual rings on the specific gravities of dry Finnish pinewood. Holz Roh- u. Werkstoff 9, no. 12: 449-56 (December, 1951). [In German]

The term "Rohwichte" (I) stands for ovendry weight in grams divided by ovendry volume in cu. cm. In the case of pinewood, (I) is influenced markedly by the volume of summerwood and by the width of the annual rings. These relationships (treated mathematically) were determined on the bases of studies with 652 samples of pine sapwood and 478 samples of heartwood. 4 tables, 10 figures, and 5 references. L.E.W.

WOOD—EXTRACTIVES

ANDERSON, ARTHUR B., MACDONALD, D. L., and FISCHER, HERMANN O. L. The structure of pinitol. J. Am. Chem. Soc. 74, no. 6: 1479-80 (March 20, 1952).

The authors have established the structure of pinitol, a monomethyl ether of *d*-inositol. Among other places, pinitol has been isolated from pines and redwood. 14 footnotes. E.S.

WOOD—PRESERVATION

SANDERMANN, WILHELM, FROEDE, OTTO, and CASTEN, REIN-

HARD. The mechanism of corrosive sublimate fixation on the wood fiber. Holz Roh- u. Werkstoff 9, no. 12: 456-60 (December, 1951). [In German]

Hypotheses on the mechanism of mercuric chloride (I) retention by wood were reviewed and then tested experimentally. The assumption that (I) is almost entirely reduced to mercurous chloride (II) which is then fixed on the fiber is unlikely. (II) is neither a powerful fungicide nor insecticide. However, its formation, in part, might possibly result from the reducing action of lignin in the wood. On the other hand, when wood treated with (I) was subjected to the ammonia test for (II), the results were negative. In addition, it was possible to remove soluble mercury compounds from the wood in acid media, which indicates the absence of predominating amounts of (II). (I) appears to be fixed by the ethylenic oxide chains of the lignin. Thus when treated wood is subjected to the action of ammonium sulfide, the middle lamella blackens. A portion of the mercury salt is not easily removable, and this may be (II). "Kyanized" wood which is exposed to light also apparently contains (II). 3 tables, 6 figures, and 27 references. L.E.W.

WOOD—PULP YIELD AND QUALITY

McKEE, W. F. The effect of wood handling and chip preparation on sulphite pulp yield and quality. Pulp Paper Mag. Can. 53, no. 3: 237-41 (Convention, 1952).

The author summarizes the experimental work of one sulfite mill for determining the extent to which the quality and yield of its product could be improved by better methods of wood preparation and chip production. The results of this work are discussed under the subdivisions: effect of species and conditions of the wood used, effect of methods of handling before and after reaching the mill, effect of chip uniformity (length, width, and thickness), and effect of chipper damage on pulp yield and quality. The data indicate that considerable improvements can be obtained by proper wood handling and chip preparation; they confirm the results obtained by previous investigators. 5 tables, 3 figures, and 12 references. E.S.

WOOD—STRUCTURE

BAILEY, I. W. Biological processes in the formation of wood. Science 115, no. 2984: 255-9 (March 7, 1952).

The present knowledge regarding the development and the structural composition of wood is summarized. Although reliable information is available on the form and distribution of cellulose and lignin, the author emphasizes the need for research on other organic constituents, such as pectic compounds and hemicelluloses, and for investigations into the biochemical reactions that occur in the living cells of the cambium, the zones of cell enlargement and of maturation, and the mature sapwood. 3 references. M.W.

WARDROP, A. B. Cell wall organization and the properties of the xylem. I. Cell wall organization and the variation of breaking load in tension of the xylem in conifer stems. Australian J. Sci. Research B 4, no. 4: 391-14 + 3 plates (November, 1951).

The variation of breaking load in tension of tangential longitudinal sections of wood, taken from successive growth rings of each of six conifer stems, has been studied. An increase in this property was observed in successive growth rings from the stem center of each specimen; this was paralleled by an increase in tracheid length, basic density, and cellulose content.

The inclination to the longitudinal cell axis of the spiral micellar system of the cell wall decreased with increasing tracheid length. Because of this known relation between spiral angle and tracheid length, the latter was used as an index of the spiral organization of the cell wall. The breaking load in tension of single tracheids taken from successive growth rings of two stems was also measured and found to increase with increasing cell length. An increase in radial growth rate of the stem was shown to result in a decrease in the average tracheid length, which was paralleled by a decrease in the breaking load in tension of the wood. Hence, the development of stems of high initial tracheid length may offer a means of effecting an improvement in the quality of the wood which is subsequently formed. Such an increase in tracheid length would also be advantageous in timber used for pulping. It is realized that these conclusions are based on limited evidence which, however, are worth further investigations. 9 tables, 25 figures, and 35 references. E.S.

WOOD OPERATIONS

HOWERTON, RAYMOND L. Newer trends in pulpwood handling. Paper Mill News 75, no. 11: 32-4 (March 15, 1952).

Following a brief consideration of the factors which influence the design of logging equipment, the Hyster D4 Hyspeed bundling winch system and its operation are described. The bundling winch is a lightweight, free-spooling, hydraulically controlled unit, capable of producing a bare drum line pull of 7000 lb. The arch principle of logging with the use of a Caterpillar D7 tractor-arch combination is also described. M.W.

WOOD ROOM

CROWN ZELLERBACH CORPORATION. Innovations in woodroom. Pulp & Paper 26, no. 3: 84, 86 (March, 1952).

The new wood-preparation facilities at the West Linn, Ore. plant are described, including a new mechanical offbearer. 6 illustrations. M.W.

WOOD TRANSPORTATION

RAMBO, W. H., and DERICE, H. A. Woodmill log handling in the pulp and paper industry on the West Coast. Tappi 35, no. 3: 100-7 (March, 1952).

The authors describe the most modern log-handling devices in wood mills on the West Coast, including log hauls, log transfers, roll conveyors, log loading and handling equipment, and band-mill installations. Hydraulic barking and chipping of whole logs and small wood handling are also discussed. The article deals throughout with actual, new installations which are operating profitably every day. 28 illustrations. E.S.

WILLS, C. L., and HILDEBRAND, C. L. Wood handling methods in pulp mills of eastern North Carolina and Virginia. Tappi 35, no. 3: 137-43A (March, 1952); *cf.* B.I.P.C. 22: 123.

The modernization of the woodyard of the Halifax Paper Co., Roanoke, N.C. is described in detail, with particular reference to the conveyor system used; unique features in other mills of that area are also mentioned, including rubber-belt and button conveyors, log-distribution baffles, sorting tables, etc. 16 illustrations. E.S.

WOOD WASTE

RISI, J. Plastics and chemicals from wood sugars. Pulp Paper Mag. Can. 53, no. 2: 63-4, 70 (February, 1952).

The production cost of ethyl alcohol from spent sulfite liquor does not compare favorably with production costs from other sources. However, if the alcohol is converted to ethylene, valuable derivatives, such as acetaldehyde, butadiene, allyl alcohol, vinyl chloride, vinylidene chloride, and chlorinated ethylene compounds can be prepared. These are widely used in the preparation of various synthetic substances, and the versatile procedure which could be employed would be able to meet the periodic variations of market conditions. Another important means of using lignocellulosic waste materials is found in the preparation of fumaric acid and its derivatives. Fumaric acid is an important raw material for a wide variety of resins, and maleic anhydride, to which it is easily converted, is used in the manufacture of varnishes. Glucose from agricultural and wood wastes can be used as the starting material, and the industrial preparation is a relatively simple fermentation process. 1 table. M.W.

WORKMEN—REHABILITATION

HOUSE, A. W. Disabled workmen rehabilitated at convalescent centre. Pulp Paper Mag. Can. 53, no. 2: 114, 119, 121 (February, 1952).

The Convalescent Centre which is operated by the Workmen's Compensation Board of Ontario to rehabilitate injured workmen and some of the methods employed are described. 3 illustrations. M.W.

YEAST

CHURCHILL, WARREN S. The use of torula yeast in the feeding of trout. Progressive Fish-Culturist 14, no. 1: 3-9 (January, 1952).

A detailed study is reported on the use of torula yeast, which is produced from spent sulfite liquor, as a food supplement in the rearing of trout. The results show that the yeast has a favorable effect on the growth rate of the fish and provides a nutritious and relatively economical supplement to their usual meat diet. 8 tables, 7 figures, and 2 references. M.W.

YELLOWING OF PAPER

LIEBERT, ERHARD. Yellowing of pulp and paper. Allg. Papier-Rundschau no. 3: 93-4, 96-7 (Feb. 12, 1952). [In German]

The German paper standardization committee was interested in developing a standard for the fastness to yellowing of paper and pulp and contacted the author to make preliminary investigations into its possibilities. Since no standards of this type have previously been introduced into the paper industry, the directions for determining the color fastness of textiles by means of standard wool samples were considered; however, with the very rapid discoloration of the pulp and paper samples, the wool samples were found much too slow in their response to give useful indications for the present purpose. Edge and McKenzie (*cf.* B.I.P.C. 7: 233) were the first to point out that on exposure to sunlight two opposite processes occur simultaneously: in addition to a rapid yellowing noticeable after a few hours, a bleaching process takes place which usually becomes discernible only after an exposure of days. The ultraviolet rays seem to be principally responsible for the yellowing; a high atmospheric moisture seems to accelerate the reaction. From exposures to direct sunlight of rag halfstuffs, chemical pulps, groundwood pulps, and plain and coated papers, the following observations were made: In all rag pulps, exposure to light caused a bleaching effect, particularly in the presence of calcium carbonate. Chemical pulps of different cooking degrees show lower yellowing tendencies, the less the lignin content. Bleached pulps were hardly affected; the whiteness of bleached birch, beech, and particularly

straw pulps improved on exposure. Groundwood pulps, on account of their high lignin content, show the most pronounced yellowing tendency; bleached groundwood loses its brightness within a few hours, irrespective of the bleaching agent employed. In contrast to what might be expected of papers—i.e., that their reactivity corresponds to the different pulp percentages present in the furnish—papers yellow relatively more, which may partly be traced to the presence of rosin and alum introduced with the sizing process. Papers treated with titanium dioxide or Blankophor (an optical bleaching agent) discolored somewhat less than untreated ones. Coated papers with a wood-free base paper were not affected by the exposure, whereas a machine-coated paper with groundwood in the furnish yellowed distinctly, although less than uncoated paper of the same composition. The possibilities for standardizing yellowing tendencies of pulp and paper do not seem too promising. The few experiments have shown that the presence of electrolytes plays an important role; the mill process water, particularly its iron content, influence the results to a far-reaching extent. In conclusion, reference is made to the availability of reliable instruments which duplicate sunlight effects and which a large number of German mills can afford; the further success of this work will depend on their development. The paper section of the Oskar-v.-Miller Polytechnikum under H. Mack will continue the present studies. 8 figures and 6 footnotes. E.S.

Patent Section

Although the abstracts of the United States and Canadian patents are prepared from the patents themselves, the initial selection of the patents to be abstracted is made from the Patent Gazette *and the* Canadian Patent Office Record *and, therefore, it is possible that the patent section will not contain all patents of potential interest to the industry. In so far as possible, an attempt will be made to indicate patents issued in both countries.*

The patent abstracts are listed under the various headings currently used for the abstracts of periodical articles.

Printed copies of United States patents can be obtained from the Commissioner of Patents, Washington, D.C.; the price is 25 cents per copy. Canadian patents up to and including December, 1948, are available only as manuscripts or photostatic copies, and an estimate of the cost of a patent should be obtained from the Commissioner of Patents, Ottawa, Canada, in advance of the order. With January, 1949, printed copies of Canadian patents are available at 25 cents per copy of less than 50 sheets of printed matter. For patents of 50 sheets or over, the price is $1.00 per copy. Beginning with volume 21, the Canadian patents will be abstracted from the complete specifications.

BARK

THOMPSON, CLARENCE L. Well drilling composition. Canadian patent 481,545. Filed April 21, 1949. Issued March 4, 1952. 10 claims. Assigned to The Pacific Lumber Company.

A drilling mud additive is made up of about one part by weight of tetrasodium pyrophosphate and about three parts by weight of the sodium hydroxide reaction product of redwood bark dust. E.G.S.

BARKERS AND BARKING

SHAW, ERNEST C. Log debarking machine. Canadian patent 481,474. Filed Nov. 3, 1947. Issued March 4, 1952. 3 claims. Assigned to Allis-Chalmers Manufacturing Company.

A barker embodies a unitary combination of a roll and cleaning tool for conveying and cleaning logs. 11 figures. E.G.S.

SHAW, ERNEST C. Oscillatable bark-removing jet having variable amplitude of oscillation. U. S. patent 2,586,727. Filed May 22, 1950. Issued Feb. 19, 1952. 17 claims. Assigned to Allis-Chalmers Manufacturing Company. [Cl. 144-208]

A hydraulic barker is described in which the amplitude of an oscillating hydraulic jet may be adjusted, while the machine is in operation, to reduce the overthrow of water beyond the edge or over the top of logs of varying diameter. 4 figures. E.G.S.

SWIFT, FRANK H. Hydraulic-barker nozzle-assembly producing composite oscillatory movement of discharging jet. Canadian patent 481,353. Filed Dec. 3, 1949. Issued Feb. 26, 1952. 5 claims. Assigned to Crown Zellerbach Corporation.

Means are provided for barking a log with a minimum number of hydraulic barking nozzles without rotation of the log; the assembly can be used for

cants and slabs as well as whole logs. This is the same as U. S. patent 2,502,763; *cf.* B.I.P.C. 20: 677. 9 figures. E.G.S.

SWIFT, FRANK H. Hydraulic debarking method. Canadian patent 481,352. Filed Oct. 3, 1949. Issued Feb. 26, 1952. 3 claims. Assigned to Crown Zellerbach Corporation.

Hydraulic debarking nozzles are described which can be used for cants and slabs as well as whole logs; each nozzle removes the bark in a wide, longitudinally extending strip. This is the same as U. S. patent 2,488,041; *cf.* B.I.P.C. 20: 281-2. 11 figures. E.G.S.

BLEACHING

HELLER, HAROLD H., and SHIRRIFF, ROBERT G. Manufacture of calcium hypochlorite bleach liquor. U. S. patent 2,587,845. Filed Oct. 8, 1949. Issued March 4, 1952. 7 claims. Assigned to Paper Patents Company. [Cl. 23-86]

A continuous cyclic process for the preparation of a calcium hypochlorite liquor which is suitable for use in bleaching pulp for papermaking comprises the steps of continuously feeding and reacting chlorine gas and a lime suspension in an agitated reaction zone; recirculating the reacted suspension; continuously withdrawing part of the reacted suspension into a settling zone; withdrawing the supernatant finished bleach liquor from the settling zone; diluting the settled sludge with an aqueous liquid and introducing it into a second settling zone; and returning the supernatant liquor therefrom to the reaction zone. 1 figure. E.G.S.

RAPSON, WILLIAM H. Method of bleaching wood pulp. U. S. patent 2,587,064. Filed March 9, 1949. Issued Feb. 26, 1952. 3 claims. Assigned to Canadian International Paper Company. [Cl. 8-105]

A process is adapted for the bleaching of chemical wood pulp to a very high brightness (i.e., 90-98.7%) and whiteness through the use of chlorine dioxide and a hypochlorite, without appreciable degradation. This is similar to Canadian patent 470,478; *cf.* B.I.P.C. 21: 430. E.G.S.

SPRAUER, JEROME W. Production of calcium hypochlorite. U. S. patent 2,587,071. Filed Nov. 24, 1945. Issued Feb. 26, 1952. 8 claims. Assigned to The Pennsylvania Salt Manufacturing Company. [Cl. 23-86]

A process for the production of neutral calcium hypochlorite embraces the steps of completely chlorinating a water suspension of hydrated lime (17-20% calcium hydroxide), adding sodium chloride to the resulting solution within a period of about 30 minutes to precipitate neutral calcium hypochlorite, maintaining the solution substantially free from soluble sulfate during the precipitation, and carrying out the precipitation below 30°C. E.G.S.

BOARD, LAMINATED

BENDER, FRIEDRICH. Manufacture of phenolic resins. Canadian patent 481,447. Filed July 14, 1943. Issued March 4, 1952. 1 claim.

A process for the production of phenolic laminates with thermoplastic properties includes the steps of condensing a phenolic compound (e.g., cresol or

phenol), formaldehyde, and hydrolyzed casein in such a way that the reaction product is water soluble, and effecting further condensation of the resin *in situ* in an impregnated paper sheet (e.g., brown kraft). E.G.S.

BOARD SPECIALTIES

ARNESON, EDWIN L. Bottle carrier. U. S. patent 2,587,808. Filed Jan. 10, 1948. Issued March 4, 1952. 9 claims. Assigned to Morris Paper Mills. [Cl. 229-52; changed to 229-28]

A paperboard bottle carrier embodies a reinforced, multi-ply handle and a braced end wall. 6 figures. E.G.S.

CASTLE, ELI N. Foldable cardboard bottle carrier. U. S. patent 2,586,301. Filed Jan. 10, 1950. Issued Feb. 19, 1952. 5 claims. [Cl. 229-28]

A collapsible paperboard bottle carrier which is constructed from an integral blank can be locked in an erected position so that its parts are prevented from shifting out of proper relation to each other. 6 figures. E.G.S.

FERGUSON, KENNETH C. Paperboard box cover lock. U. S. patent 2,586,156. Filed Jan. 7, 1949. Issued Feb. 19, 1952. 1 claim. Assigned to Inland Container Corporation. [Cl. 229-45]

A cover lock for a re-usable, corrugated or fiberboard beer case comprises an arrangement of a complementary tongue and recessed opening. 3 figures. E.G.S.

HOWARD, KEVIN E. Disposable dish and base therefor. U. S. patent 2,588,727. Filed May 4, 1945. Issued March 11, 1952. 1 claim. [Cl. 65-15]

A paper or, preferably, cardboard liner for a dish base (e.g., earthenware, porcelain, china, metal, or the like) is coated or sized with a water- and greaseproofing composition. 7 figures. E.G.S.

LANGOS, ALFRED F. Combination toy gun holster and package. U. S. patent 2,590,187. Filed Dec. 21, 1949. Issued March 25, 1952. 9 claims. Assigned to Langson Manufacturing Co. [Cl. 224-2]

A combined carton and holster for a toy gun is designed to conform to the shape of the gun and is provided with means for engagement by a garment belt. 7 figures. E.G.S.

OLSEN, THOMAS S. Package and enclosed tray thereof. U. S. patent 2,588,409. Filed March 29, 1949. Issued March 11, 1952. 2 claims. Assigned to General Baking Company. [Cl. 229-72; changed to 206-56]

A paperboard tray which is designed for use in the packaging of a loaf of bread is constructed in such a manner that an end of the tray may be turned, folded, or rolled up for foreshortening as the number of slices in the wrapper is depleted by removal from the other end of the package. 13 figures. E.G.S.

PASTULA, JOSEPH A. Match package. U. S. patent 2,589,125. Filed Dec. 9, 1949. Issued March 11, 1952. 1 claim. [Cl. 206-29]

A match package embodies a foldable cover which has two abrasive strips or bands so that a match may be lighted by inserting the head between the abrasive strips with the cover closed, squeezing the overlapping cover portions, and pulling the match outwardly from between the strips. 6 figures. E.G.S.

RUTHVEN, JAMES, JR., and HARRISON, ROBERT G. Insulated box. U. S. patent 2,590,724. Filed Oct. 11, 1949. Issued March 25, 1952. 3 claims. [Cl. 229-16]

A double-wall, insulated, corrugated carrying case for bottles or cans of beverages is coated with a water-resistant composition to afford protection against water damage. The bottom of the case and the top of the cover are reinforced with plywood so that the case may be used as a seat. 9 figures. E.G.S.

TIEGEL, MARGARET D. Insulating and heating jacket for food containers. U. S. patent 2,589,645. Filed July 23, 1948. Issued March 18, 1952. 7 claims. [Cl. 126-263]

A moisture-resistant, thermal insulating jacket for food containers (e.g., infants' nursing bottles) consists of a cardboard outer container, a void space maintained by cardboard separators, and an inner layer of fibrous material (e.g., cotton) enclosed in a moisture-resistant envelope. 4 figures. E.G.S.

WEAVER, RUTH K., and THATCHER, LEWIS E. Bobby pin display card. U. S. patent 2,586,192. Filed Oct. 26, 1948. Issued Feb. 19, 1952. 2 claims. Assigned to Gaylord Products, Incorporated. [Cl. 206-66]

A cardboard display card for bobby pins embodies means for engaging the pins against accidental axial or lateral displacement from their mounted positions along the edge of the card. 8 figures. E.G.S.

CALCIUM CARBONATE

HELLER, HAROLD H., and SAUNDERS, GEORGE H. Manufacture of chalk. U. S. patent 2,587,999. Filed June 27, 1950. Issued March 4, 1952. 8 claims. Assigned to Paper Patents Company. [Cl. 23-66]

A process is provided for the manufacture of chalk which is of uniform particle size and which consists essentially of individual crystals as contrasted with agglomerated masses of the crystals. The product is particularly suitable for use in paper coatings. 1 figure. E.G.S.

SCHUR, MILTON O., and LEVY, ROBERT M. Method of manufacturing calcium carbonate. Canadian patent 481,034. Filed Aug. 22, 1947. Issued Feb. 12, 1952. 4 claims. Assigned to Ecusta Paper Corporation.

A method is described for the preparation of a calcium carbonate filler for cigarette paper. The essential feature of the process is the precipitation of the calcium carbonate in the presence of a suspension of previously produced calcium carbonate of fine particle size. This is the same as U. S. patent 2,538,802; *cf.* B.I.P.C. 21: 432-3. E.G.S.

DIELECTRICS

DAVEY, EDWARD L. Electric cables. Canadian patent 481,367. Filed Sept. 15, 1950. Issued Feb. 26, 1952. 2 claims. Assigned to W. T. Glover & Company Limited.

A super-tension electrical cable embodies a lapped dielectric which consists of an inner part built up of single strip layers of oriented polystyrene and layers of preimpregnated paper, and an outer part of preimpregnated paper. Under operating conditions the interstices of both parts are filled with nitrogen under superatmospheric pressure (e.g., 14 atmospheres). 1 figure.
E.G.S.

KING, ALBERT. Electric cable having a nonmigratory insulating compound. U. S. patent 2,586,345. Filed Jan. 7, 1946. Issued Feb. 19, 1952. 7 claims. Assigned to British Insulated Callender's Cables Limited. [Cl. 174-121]

An impregnated paper-insulated electrical cable comprises a conductor, an interstiched, laminated paper body which surrounds the conductor; an impervious lead sheath which encloses the laminated assembly; and a normally plastic solid (m.p. about 84°C.) with which the interstices of the body are filled and the paper impregnated. The plastic composition has a melting point of about 84° and consists of about 70 parts by weight of microcrystalline wax (m.p. about 85°) and about 30 parts by weight of cable oil. 1 figure.
E.G.S.

DISPENSING CONTAINERS

FAL, BARNEY J. Match box with safety stop. U. S. patent 2,589,356. Filed June 9, 1949. Issued March 18, 1952. 2 claims. [Cl. 229-9; changed to 206-33]

A cardboard matchbox is characterized by a one-way opening cover which requires the box to be fully closed in order to strike and ignite the match taken from the box. 4 figures. E.G.S.

GUEST, MAURICE C. Dispensing cartons. Canadian patent 473,352. Filed July 29, 1949. Issued May 1, 1951. 2 claims. Assigned to George W. Bartlett.

A dispensing carton for candy, gum, lozenges, and similar material includes a flap which permits the articles to be dispensed singly from the carton. This is the same as U. S. patent 2,480,729; *cf.* B.I.P.C. 20: 139. 5 figures. E.G.S.

ONKEY, THEODORE F. Dispensing package. U. S. patent 2,586,765. Filed Jan. 29, 1949. Issued Feb. 19, 1952. 3 claims. Assigned to Roberts Rouge Company. [Cl. 206-56]

This corresponds to Canadian patent 479,773; *cf.* B.I.P.C. 22: 454.
E.G.S.

SNYDER, ROBERT F. Box closure. U. S. patent 2,588,996. Filed June 10, 1948. Issued March 11, 1952. 5 claims. [Cl. 229-17]

A paperboard container for soaps, detergents, breakfast foods, and the like incorporates dispensing means which may be closed to maintain the contents in a sanitary condition. 10 figures. E.G.S.

FLOOR COVERING

LURIE, JOSEPH M. Laminated sheet for use as a wall or floor covering. U. S. patent 2,589,502. Filed April 14, 1947. Issued March 18, 1952. 4 claims. Assigned to Bonafide Mills, Inc. [Cl. 154-49]

A laminated sheet which is intended for use as a covering for floors, walls, and other surfaces comprises a preformed, thermoplastic resinous sheet (e.g., a vinyl acetate-vinyl chloride copolymer) about 0.008-0.012 inch thick, which is bonded to one surface of a relatively incompressible fiberboard, which in turn is bonded to a resilient fibrous layer (e.g., asphalt-saturated felt). 1 figure. E.G.S.

FOLDING BOXES

ADAMS, WALLACE A. Folding box. U. S. patent 2,588,455. Filed June 28, 1948. Issued March 11, 1952. 16 claims. [Cl. 229-34]

A one-piece folding box has a horizontally disposed shelf or ledge which forms a support for a superimposed similar box. Several of the filled boxes may be nested together without crushing or otherwise damaging the boxes or their contents. 32 figures. E.G.S.

BROOKS, LEWIS C. Tube type container. U. S. patent 2,589,045. Filed April 16, 1947. Issued March 11, 1952. 2 claims. Assigned one third to Ira M. Jones. [Cl. 229-37]

The surfaces of a paperboard frozen food container are coated with a thermoplastic composition (e.g., microcrystalline wax) to render it leakproof. 10 figures. E.G.S.

FOGEL, SAMUEL. Windowed display container with article supporting platform. U. S. patent 2,587,828. Filed April 10, 1946. Issued March 4, 1952. 7 claims. [Cl. 206-45.19]

An article-holding insert is arranged on the bottom wall of an outer casing, the top and side portions of which are formed by a one-piece wall-forming member provided with a window opening and a permanently attached sheet of transparent material which covers the opening. 18 figures. E.G.S.

FRANKENSTEIN, WILLIAM P. Carton. U. S. patent 2,588,377. Filed April 4, 1946. Issued March 11, 1952. 11 claims. [Cl. 229-33]

A display and dispensing carton for flashlight batteries, golf balls, and the like incorporates a break-back lid. 12 figures. E.G.S.

FRANKENSTEIN, WILLIAM P. Cartons. Canadian patent 481,394. Filed Nov. 19, 1949. Issued Feb. 26, 1952. 10 claims. Assigned to Patented Packages.

A hollow-wall knockdown carton is provided with fold or score lines which may be broken prior to setting up. This is the same as U. S. patent 2,493,189; *cf.* B.I.P.C. 20: 447. 16 figures. E.G.S.

FRANKENSTEIN, WILLIAM P. Cartons. Canadian patent 481,395. Filed Nov. 19, 1949. Issued Feb. 26, 1952. 15 claims. Assigned to Patented Packages.

A hollow-wall carton embodies a step or shoulder portion either inside or

outside the carton. This is the same as U. S. patent 2,494,234; *cf.* B.I.P.C. 20: 447. 10 figures. E.G.S.

O'REILLY, JOSEPH A. Egg carton. U. S. patent 2,588,936. Filed Dec. 6, 1949. Issued March 11, 1952. 6 claims. [Cl. 229-29]

An egg carton is provided with a succession of spaced, transverse partition-forming strips, and with intermediate cushioning strips at a lower level, on which the eggs are supported within the cells, spaced from the top and bottom walls of the carton. 13 figures. E.G.S.

INSULATION AND INSULATING MATERIALS

LANNAN, GEORGE M. Apparatus for forming fibrous mats. U. S. patent 2,589,008. Filed July 3, 1947. Issued March 11, 1952. 6 claims. Assigned to Owens-Corning Fiberglas Corporation. [Cl. 19-80]

Equipment is provided for the manufacture of fibrous glass mats which consist of randomly arranged glass fibers and which incorporate a large proportion of voids or air spaces that impart high acoustical or thermal insulating properties. The product is suitable for cushioning, padding, and clothing interlining material. 4 figures. E.G.S.

INTERIOR PACKING

CUNNINGHAM, GALE C., and WELDON, ROBERT. Package and method of packaging. U. S. patent 2,589,604. Filed March 11, 1949. Issued March 18, 1952. 1 claim. Assigned to North American Aviation, Inc. [Cl. 206-62]

A protective package for a pane of glass comprises an inner member of corrugated fiberboard and a corresponding outer member. The sheet of glass is maintained in spaced relation within the package by strips of pressure-sensitive adhesive tape which encircle the glass and engage the walls of the inner packaging member. 6 figures. E.G.S.

DELINE, IRVING A. Compartment box partition. U. S. patent 2,587,706. Filed March 7, 1949. Issued March 4, 1952. 3 claims. [Cl. 229-42; changed to 229-15]

A cardboard cut-out partition blank is designed in such a manner that integral means are provided for bracing and holding the bent partitions in their final positions. The partition member is adapted for use in the packaging of candy (e.g., chocolate-coated cherries) or cookies. 4 figures. E.G.S.

ZIMMERMAN, HARRY F. Means for packing articles for shipment. U. S. patent 2,590,071. Filed Oct. 14, 1948. Issued March 18, 1952. 7 claims. Assigned to Bendix Aviation Corporation. [Cl. 45-22]

A one-piece protective pad which is intended for use in the packing of television tables and similar articles in a knockdown form is made by stamping or die cutting a cardboard sheet. 3 figures. E.G.S.

LIGNIN

HERITAGE, CLARK C., and VAN BECKUM, WILLIAM G. Process for metal recovery. U. S. patent 2,589,252. Filed Dec. 7, 1946.

Issued March 18, 1952. 9 claims. Assigned to Weyerhaeuser Timber Company. [Cl. 260-124]

In a process for the recovery of metals from solutions of their salts, an aqueous solution (e.g., Asplund black liquor) of a material selected from the group consisting of water-soluble lignic acid and water-soluble lignates is reacted with an aqueous salt solution of a metal which forms a water-insoluble metal lignate, and a precipitated metal lignate is recovered. E.G.S.

LIGNIN ESTERS

DORLAND, RODGER M., and BOEHM, ROBERT M. Esterification of lignins and lignin-like material. Canadian patent 481,389. Filed Jan. 29, 1945. Issued Feb. 26, 1952. 22 claims. Assigned to Masonite Corporation.

The ready reaction of lignin (e.g., from wood, cornstalks, sugar cane, and the like) and its depolymers with alkali is utilized to bring about a non-reversible esterification reaction which provides high heat, alkali, and water resistance and improved plasticity in the final product. The resulting resinous material performs as a bonding agent in the manufacture of board, molded products, and the like. E.G.S.

MACHINERY—CONSISTENCY REGULATORS

POIRIER, ERNEST A. Automatic consistency regulator for pulp and paper stocks. U. S. patent 2,587,760. Filed Nov. 8, 1947. Issued March 4, 1952. 13 claims. [Cl. 137-78]

A consistency regulator for papermaking stock comprises a conduit which includes a supply section, a resistance area, a chamber, and an adjustable delivery gate; an adjustable device for predetermining the rate of flow of stock into the resistance area; and means for holding a supply of dilution water under a constant head, which is provided with an outlet opening into the stream of stock at a point where the head varies with changes in consistency. This corresponds to Canadian patent 472,243; *cf.* B.I.P.C. 21: 666. 4 figures. E.G.S.

MACHINERY—CONVERTING MACHINERY

ELSMAN, JAMES L. Method and apparatus for printing and applying labels to wrapping paper. U. S. patent 2,590,239. Filed Dec. 30, 1948. Issued March 25, 1952. 19 claims. [Cl. 154-1.6]

An apparatus is adapted for use as an attachment for a wrapping machine in printing and applying a label band or strip to a paper web. 5 figures. E.G.S.

LABOMBARDE, HAROLD S. Machine for prebreaking, gluing, folding, delivering, and stacking creased carton blanks. U. S. patent 2,589,944. Filed April 2, 1948. Issued March 18, 1952. 34 claims. Assigned to The International Paper Box Machine Company. [Cl. 93-52]

An apparatus is provided for prebreaking carton blanks of the type which have a glue lap, a glue lap crease, a center crease, a mid-crease between the glue lap and center creases, and a mid-crease in the panel at the opposite side of the center crease. All four creases are folded flat through 180° and preferably ironed at the creases, thus producing, when the blank is folded and glued, a 180° balanced prefold glued carton blank. 37 figures. E.G.S.

LEVKOFF, DAVID. Apparatus for setting up box blanks. U. S. patent 2,587,050. Filed July 3, 1947. Issued Feb. 26, 1952. 16 claims. [Cl. 93-53]

A box-folding machine utilizes pneumatic means (e.g., suction cups) to engage each side of a blank and to pull the sides up into an erected position. 11 figures. E.G.S.

LIPPITT, STEPHEN W. Machine for the manufacture of fiber footwear. U. S. patent 2,588,132. Filed June 17, 1947. Issued March 4, 1952. 2 claims. Assigned to Sani-Tread Company Incorporated. [Cl. 93-1]

A machine embodies means for cutting sandal blanks from a running paper web, progressively folding and cementing the blanks into finished form, crimping or embossing the folded blanks, and adjusting the finished sandals into position for packing with certain of a preselected number thereof arranged in offset relation. 31 figures. E.G.S.

MOBLEY, EDWIN H. Device for setting up collapsible cellular cartons. U. S. patent 2,586,551. Filed Aug. 30, 1949. Issued Feb. 19, 1952. 10 claims. Assigned to Bloomer Bros. Company. [Cl. 93-37]

A device which is adapted for use in the erection of cellular egg cartons comprises a base which has a series of upstanding fingers or blades adapted to engage and swing the transverse partitions from a horizontal to vertical position as a partially erected carton is inverted and pressed downwardly thereon. 16 figures. E.G.S.

SCRUGGS, THOMAS M. Apparatus and method for manufacture of composite web material. U. S. patent 2,588,580. Filed Aug. 7, 1950. Issued March 11, 1952. 8 claims. Assigned to Bemis Bro. Bag Company. [Cl. 154-1.6]

A method and apparatus are provided for the adhesive combination of a web of open-mesh fabric and a paper label strip which is narrower than the web. 3 figures. E.G.S.

SOCKE, JOHN E. Sealing head mechanism for closing and sealing bags and flexible containers. U. S. patent 2,587,663. Filed April 29, 1948. Issued March 4, 1952. 11 claims. Assigned to American Can Company. [Cl. 53-102]

A mechanism is adapted for folding and sealing the open end of a paper bag or container which is filled with such articles as cans. Means are included for holding the cans in a compact arrangement during the sealing operation. 8 figures. E.G.S.

MACHINERY—CORRUGATING MACHINE

AQUILLA, JOHN. Machine for making corrugated paperboard. U. S. patent 2,587,273. Filed Aug. 4, 1948. Issued Feb. 26, 1952. 3 claims. Assigned to Eagle National Printing and Die Cutting Corp. [Cl. 154-31]

A corrugating machine includes a drive for the facing mechanism and an independent drive for the corrugating mechanism. A paper web is passed

continuously through the heated corrugating unit, independently of the facing device, and the overheating of the corrugated paper is prevented. 5 figures. E.G.S.

HERZOG, CARL. Process and device for the manufacture of corrugated sheets of asbestos cement. U. S. patent 2,589,379. Filed Feb. 4, 1949. Issued March 18, 1952. 7 claims. Assigned to Eternit A.-G. [Cl. 154-30]

A device for use in the manufacture of corrugated asbestos-cement sheets embodies suction chambers arranged at spaced intervals, which grip the sheets and fold them into corrugations of the desired width and depth. The corrugated sheets are then placed in suitable corrugated molds until they have set. 6 figures. E.G.S.

RULLO, GABRIEL NICHOLAS. Adhesive applicator for corrugating machines. U. S. patent 2,589,966. Filed Jan. 15, 1948. Issued March 18, 1952. 1 claim. Assigned to S&S Corrugated Paper Machinery Co., Inc. [Cl. 118-249]

An adhesive applicator for a corrugating machine is mounted in such a manner that the applicator and its container may be simultaneously adjusted downward and horizontally away from the corrugating rolls to provide ready access to the rolls for cleaning and threading purposes. 2 figures. E.G.S.

MACHINERY—CUTTERS

BADENHAUSEN, OTTO A., WAHL, EUGENE A., and BOEHL, WILHELM. Mechanism to sever tape between adjacent ends of cartons. U. S. patent 2,586,903. Filed June 15, 1949. Issued Feb. 26, 1952. 8 claims. Assigned to P. Ballantine & Sons. [Cl. 164-48]

A machine for sealing cartons of the type which have inwardly foldable closure flaps incorporates a solenoid-actuated knife for severing the sealing tape between adjacent ends of the cartons as the latter move off a primary conveyor onto a discharge conveyor. 9 figures. E.G.S.

KELLER, HARRY. Box cutting attachment for paper box machines. U. S. patent 2,590,774. Filed March 16, 1950. Issued March 25, 1952. 9 claims. [Cl. 164-61]

A cutting attachment for a box-wrapping machine comprises one or more cutters which are moved laterally into and out of cutting relation with the walls of the box, whether wrapped or unwrapped. 8 figures. E.G.S.

MACHINERY—DRYERS

KELSEY, WALTER. Paper machine drier. U. S. patent 2,586,829. Filed Dec. 8, 1949. Issued Feb. 26, 1952. 1 claim. [Cl. 34-124]

A paper machine drier comprises an outer revolving cylinder and an inner stationary cylinder which together form a circumferential air chamber that encloses steam pipes or electrical resistance heating units for heating the enclosed air. The heated air in the chamber in turn serves to heat the revolving cylinder to the desired temperature. 13 figures. E.G.S.

TREVISAN, BRUNO. Drying cylinder. Canadian patent 481,096. Filed Sept. 15, 1947. Issued Feb. 12, 1952. 1 claim. Assigned to Papierfabrik Balsthal.

The jacket of a paper drier roll is divided by internal partitions into one endless zigzag passage for the flow of hot water, which is used as the heating medium. 4 figures. E.G.S.

MACHINERY—FELTS

BERGLUND, ORION W. Web carrier and method of making. U. S. patent 2,589,765. Filed Feb. 17, 1950. Issued March 18, 1952. 4 claims. Assigned to The Orr Felt & Blanket Company. [Cl. 28-76; changed to 28-72.3]

A papermaking felt which exhibits a high wet tensile strength and good resistance to chemicals and abrasion is produced by impregnating a wool-fiber base with an aqueous phenol-formaldehyde resin solution and curing the resin in the felt. 8 figures. E.G.S.

GATES, PERCIVAL T. Industrial and papermakers' felt and method of producing the same. U. S. patent 2,588,228. Filed Jan. 16, 1948. Issued March 4, 1952. 14 claims. Assigned to Drycor Felt Company. [Cl. 28-72.2]

A synthetic fiber material (e.g., nylon) is incorporated in the fleeces which are needled into both sides of a papermaker's felt. This corresponds to Canadian patent 472,136; *cf.* B.I.P.C. 21: 667. 3 figures. E.G.S.

MACHINERY—FILTERS

CHASE, CHARLES B. Filter element. Canadian patent 481,364. Filed Feb. 15, 1947. Issued Feb. 26, 1952. 1 claim. Assigned to Fram Corporation.

A replaceable paper cartridge for an oil filter is constructed in such a manner that it has a relatively large capacity for the collection of contaminant. This is the same as U. S. patent 2,556,521; *cf.* B.I.P.C. 21: 820. 17 figures. E.G.S.

MACHINERY—GRINDERS

WORM, ERWIN A., JR., and RAYMOND, ARTHUR G. Feeding device for wood grinders. U. S. patent 2,588,448. Filed May 2, 1949. Issued March 11, 1952. 7 claims. Assigned to Armstrong Cork Company. [Cl. 241-282]

A feeder for wood grinders is provided in which the wood may be stacked in a generally horizontal position and delivered as a charge into a grinder pocket in a vertical stack with the bolts in the proper position for longitudinal grinding. 2 figures. E.G.S.

MACHINERY—HEAD BOX

STAEGE, STEPHEN A. Paper machinery. U. S. patent 2,589,639. Filed Oct. 17, 1947. Issued March 18, 1952. 6 claims. Assigned to The Black-Clawson Company. [Cl. 92-44]

A stock inlet is provided for a Fourdrinier machine with an open headbox which is adapted to discharge stock through a slot orifice at a relatively high, uniform velocity across the width of the machine. This corresponds to Canadian patent 472,110; *cf.* B.I.P.C. 21: 667-8. 4 figures. E.G.S.

MACHINERY—PACKAGING MACHINERY

CONTI, JOHN D. Packaging machine. U. S. patent 2,586,006.

Filed June 29, 1949. Issued Feb. 19, 1952. 23 claims. Assigned to American Viscose Corporation. [Cl. 53-136]

A machine is adapted for automatically conveying a carton and an article (e.g., wound rolls of cellophane, paper, or fabric) to be inserted into the carton along separate paths to a common carton-filling or loading station, conveying the filled carton to a flap-gluing station, and then to a flap-closing station from which it may be conveyed to any other operation, such as weighing, labeling, or the like. 16 figures. E.G.S.

RUSSELL, CLARENCE J. Magazine wrapping machine. U. S. patent 2,590,351. Filed Jan. 7, 1948. Issued March 25, 1952. 4 claims. [Cl. 53-70]

A machine for the wrapping of magazines includes automatic means which compensate for variations in thickness, as well as a device which inserts maps or other matter into the magazines without interrupting their travel through the machine. 22 figures. E.G.S.

MACHINERY—PAPER MACHINE—CYLINDER MOLD

STAEGE, STEPHEN A. Paper machinery. U. S. patent 2,589,638. Filed July 19, 1946. Issued March 18, 1952. 11 claims. Assigned to The Black-Clawson Company. [Cl. 92-44; changed to 92-43]

A stock inlet passage for a paper machine is adapted to receive stock at high velocity and includes a venturi portion which is designed to dissipate the velocity energy of the stock with minimum turbulence. This corresponds to Canadian patent 465,816; *cf.* B.I.P.C. 20: 832. 3 figures. E.G.S.

MACHINERY—PASTING MACHINE

WILLS, STANLEY C. F. Machine for the manufacture of paper bags. U. S. patent 2,587,422. Filed May 21, 1949. Issued Feb. 26, 1952. 2 claims. Assigned to E. S. & A. Robinson, Limited. [Cl. 154-42]

In the manufacture of paper bags, the seams of the bags are heat sealed by the application of one or more jets or streams of hot air. 10 figures. E.G.S.

MACHINERY—ROLL BREAKER

HOLMBERG, JOHN A. Paper roll breaker. Canadian patent 481,354. Filed Nov. 9, 1950. Issued Feb. 26, 1952. 10 claims. Assigned to Crown Zellerbach Corporation.

A machine is provided for breaking apart and separating small, individual rolls of paper (e.g., toilet tissue) after they have been cut from longer rolls. This is the same as U. S. patent 2,537,464; *cf.* B.I.P.C. 21: 438. 8 figures. E.G.S.

MACHINERY—SLITTERS AND WINDERS

REBUT, JACQUES, and CHERIGIÉ, PIERRE. Constant tension drive for web reel. Canadian patent 481,535. Filed Jan. 9, 1950. Issued March 4, 1952. 4 claims. Assigned to La Cellophane.

This is the same as U. S. patent 2,563,660; *cf.* B.I.P.C. 22: 75-6. E.G.S.

MACHINERY—STRIPPING MACHINE

HEDSTROM, ERIC L., OTTO, MARTIN C., and GOODERHAM, CECIL E. Box or carton stripper machine. U. S. patent 2,588,384. Filed Aug. 10, 1946. Issued March 11, 1952. 12 claims. [Cl. 93-58]

This is the same as Canadian patent 474,872; *cf.* B.I.P.C. 22: 76. E.G.S.

MACHINERY—VATS

BREYFOGLE, ROY H., and HOLLIS, ROBERT F. Cylinder type paper machine. U. S. patent 2,590,288. Filed April 19, 1947. Issued March 25, 1952. 7 claims. Assigned to Alton Box Board Company. [Cl. 92-43]

A seal is effected between the ends of a cylinder mold and the side walls of the vat by the provision of a resilient annular seal which projects axially from each end of the mold and bears endwise against a wearing ring mounted on each side wall. This corresponds to Canadian patent 470,794; *cf.* B.I.P.C. 21: 439. 9 figures. E.G.S.

MATERIALS HANDLING

SHOWALTER, FRANK W. Turntable for paper roll stands. Canadian patent 481,187. Filed Sept. 20, 1948. Issued Feb. 19, 1952. 16 claims. Assigned to The American Envelope Company.

This corresponds to U. S. patent 2,585,859; *cf.* B.I.P.C. 22: 546. E.G.S.

MOLDED PULP ARTICLES

NELSON, ARTHUR W., and ALFREDS, TORRIS H. Egg packing material. U. S. patent 2,588,150. Filed Dec. 7, 1946. Issued March 4, 1952. 3 claims. Assigned to Mapes Consolidated Manufacturing Company. [Cl. 217-34]

A molded-pulp packaging material is adapted to be inserted between two of the solid walls of an egg case and the adjacent end strips of the cellular filler in one or more of the layers of packed eggs. The material serves to limit the bending of the tips projecting outwardly from the adjacent end strips toward the walls and thereby to prevent the end strips from engaging or touching the walls. 6 figures. E.G.S.

SHERMAN, FRANCIS H. Molded pulp egg carton. U. S. patent 2,587,909. Filed Feb. 17, 1947. Issued March 4, 1952. 5 claims. Assigned to Shellmar Products Corporation. [Cl. 229-2.5]

A molded-pulp egg carton is provided with locking tabs on the lid which can be inserted in tab-receiving openings in the bottom portion of the carton. This corresponds to Canadian patent 463,226; *cf.* B.I.P.C. 20: 535. 7 figures. E.G.S.

STEVENS, SAMUEL S. Receptacle and method of making the same. U. S. patent 2,590,221. Filed April 25, 1947. Issued March 25, 1952. 10 claims. Assigned to The Diamond Match Company. [Cl. 154-83]

A molded-fiber package for frozen foods is provided with an inner liner or outer covering, or both, of an organic plastic sheeting (e.g., cellulose acetate, latex, vinyl chloride, cellophane, or the like) which serves to render the wall of the package impervious to vapors and liquids. 10 figures. E.G.S.

PACKAGING

ANDREW, JAMES B. W., JR. Bobbin package. U. S. patent 2,588,791. Filed Aug. 14, 1948. Issued March 11, 1952. 1 claim. Assigned to Container Corporation of America. [Cl. 206-46; changed to 206-65]

A paperboard wrap for bobbins of rayon yarn is secured in bobbin-enclosing condition by the frictional engagement of its top flaps with the neck of a knob on the bobbin. 3 figures. E.G.S.

O'MALLEY, THOMAS R. Method and means for packaging. U. S. patent 2,586,078. Filed June 19, 1946. Issued Feb. 19, 1952. 2 claims. Assigned to American Viscose Corporation. [Cl. 229-87]

A wrapper for a hollow body or cake of filamentary material (e.g., yarn, thread, or the like) is constructed from a sheet of wet-strength paper which is pleated and formed into a tube by an overlapping of the side margins of the sheet. The pleated portions extend lengthwise of the tube. After an article has been enclosed in the wrapper, the latter may be heat sealed with a previously applied wax or resin composition. 5 figures. E.G.S.

WILLIAMS, BILL D. Packaging of nails and the like. U. S. patent 2,590,358. Filed July 7, 1950. Issued March 25, 1952. 6 claims. [Cl. 206-46; changed to 206-66]

A nail package consists of two subassemblies, each of which is produced by pushing nails through a cardboard supporting sheet in a generally parallel array. The subassemblies are combined to form the complete package by pushing the nail shanks of the first subassembly between the shanks of the second unit, so that the tips of the nails of each subassembly are juxtaposed to the supporting sheet of the other subassembly. 4 figures. E.G.S.

PAPER—COATED

SNOWMAN, PAUL A., JR. Method of applying a discontinuous coating to paper. U. S. patent 2,589,302. Filed Aug. 5, 1948. Issued March 18, 1952. 3 claims. Assigned to North American Paper Process Company, Inc. [Cl. 117-38]

A relatively low-grade paper (e.g., kraft) is coated by an intaglio process with a uniform, fine, discontinuous pattern, the coating is dried, and a skin is formed and glazed by passage of the coated web over a heated glazing-drying roll. 8 figures. E.G.S.

VAN WIRT, ALFRED E., and JONES, GEORGE F. Method of pigment coloring. U. S. patent 2,586,188. Filed June 24, 1947. Issued Feb. 19, 1952. 5 claims. Assigned to Imperial Paper and Color Corporation. [Cl. 117-47]

A method of producing a colored surface on an article (e.g., wallpaper, leather, etc.) comprises the application of a thickened aqueous pigment paste which is negatively charged, the subsequent application of an aqueous dispersion of a cationic, water-dispersible resin (e.g., melamine- or urea-formaldehyde), and the heat treatment of the applied resin to effect a cure. E.G.S.

PAPER SIZING

ERSPAMER, AUGUST S. Paper size. Canadian patent 481,519. Filed Sept. 13, 1947. Issued March 4, 1952. 10 claims. Assigned to P. H. Glatfelter Company.

A paper sizing composition comprises an aqueous alkaline suspension which contains about 12% by weight of a mixture of rosin and a copolymer of glycerol and maleic anhydride. This is the same as U. S. patent 2,541,692; *cf.* B.I.P.C. 21: 520. E.G.S.

PAPER SPECIALTIES

AMBERG, WALTER E. Conical paper cup with rounded bottom and method of manufacture thereof. Canadian patent 481,081. Filed Nov. 24, 1948. Issued Feb. 12, 1952. 5 claims. Assigned to Lily-Tulip Cup Corporation.

A conical paper cup is constructed with a rounded bottom. The included angle of the walls is less than 60°. The cup is the same as that described in U. S. patent 2,473,840; *cf.* B.I.P.C. 19: 825-6. 19 figures. E.G.S.

BAYMILLER, JOHN W. Manufacture of fiber gasket material. U. S. patent 2,588,340. Filed Sept. 20, 1948. Issued March 11, 1952. 9 claims. Assigned to Armstrong Cork Company. [Cl. 117-164]

A fiber gasket material which is characterized by high tensile strength and crush resistance comprises a fibrous sheet (e.g., kraft paper) which is impregnated with a tanned, dried saturant containing glue, glycerin, resorcinol, and triethanolamine. E.G.S.

BRADY, CHARLES V., and OTTINGER, AUGUST F. Labeled open-mesh bag. U. S. patent 2,588,695. Filed Dec. 4, 1948. Issued March 11, 1952. 8 claims. Assigned to Bemis Bro. Bag Company. [Cl. 150-1]

This corresponds to Canadian patent 477,800; *cf.* B.I.P.C. 22: 301. E.G.S.

ELLIS, ERNEST W. Satchel bags. Canadian patent 481,105. Filed Dec. 12, 1949. Issued Feb. 12, 1952. 2 claims. Assigned to E. S. & A. Robinson, Limited.

In the manufacture of satchel bags a suitable heat- and/or pressure-sealing adhesive is applied to the outer face of a paper web or tube at places which are to be located in the re-entrant folds or gussets at the bottom of the bag. Similar places at the top of the bag may be treated in the same manner. 5 figures. E.G.S.

HUNTZICKER, HARRY N., and WISE, JOHN K. Plasterboard, scuff resistant paper liner, and process. U. S. patent 2,590,013. Filed June 22, 1948. Issued March 18, 1952. 6 claims. Assigned to United States Gypsum Company. [Cl. 154-45.9]

A porous, highly sized, calendered paper sheet which is suitable for use as a gypsum wallboard paper liner and has scuff-resistant properties contains in gradually diminishing quantities from one surface of the sheet to the other a heat-cured, preformed heat reaction product of water, a polysaccharide

(i.e., a starch or dextrin), a compound selected from the group consisting of aliphatic amines and amides (e.g., urea), and an aldehyde (e.g., formaldehyde). The finished sheet contains 0.5-5.0% by weight of the condensate. E.G.S.

KNEWSTUBB, NORMAN W., and JENKINS, COLIN N. Laminated article having an unimpregnated surface and method of making the same. U. S. patent 2,587,171. Filed Jan. 7, 1950. Issued Feb. 26, 1952. 5 claims. Assigned to Union Carbide and Carbon Corporation. [Cl. 154-120]

A laminated article comprises a stack of heat-hardenable, resin-bonded (e.g., phenol formaldehyde) fibrous sheets and an outer split sheet of non-resin impregnated, rough, porous paper bonded to the stack by resin from a contiguous bonded sheet. 4 figures. E.G.S.

MCMAHON, GEORGE F. Circuit interrupting means. U. S. patent 2,586,171. Filed May 1, 1947. Issued Feb. 19, 1952. 1 claim. Assigned to S & C Electric Company. [Cl. 200-120]

An insulating, arc-extinguishing sleeve for a replaceable fuse link is formed of rolled paper impregnated with an arc-extinguishing material (e.g., magnesium borate) so that it can withstand handling and stress incident to assembly and operation in a cutout. 4 figures. E.G.S.

NEIDICH, GEORGE G. Ink transfer ribbon. U. S. patent 2,590,200. Filed Nov. 19, 1949. Issued March 25, 1952. 7 claims. Assigned to The Todd Company, Inc. [Cl. 197-172]

A transfer ribbon is produced on a base of strong, tough, substantially uncoated paper, impregnated throughout with a large volume of suitable printing medium and capable of supplying a large number of sharp type impressions. The paper is preferably made from bast fibers (e.g., manila hemp, jute, linen, yoshino, or mitsumata) and is sized with a melamine resin composition. 2 figures. E.G.S.

PETERS, HARRY, and PIERSON, CLYDE D. Sleeve for bag valves. U. S. patent 2,590,568. Filed May 27, 1949. Issued March 25, 1952. 2 claims. Assigned to The Raymond Bag Company. [Cl. 229-62.5]

A slit sleeve which is adapted to be inserted into a preformed bag valve by a mechanical inserter can be firmly engaged by and supported on the inserting element during the folding and inserting operations. The inner portions of the sleeve can be separated at the fold line after the sleeve has been inserted. 5 figures. E.G.S.

ROBINS, SEYMOUR. Envelope with hanger support. U. S. patent 2,590,273. Filed May 15, 1950. Issued March 25, 1952. 4 claims. [Cl. 229-68]

A mailing envelope for paper ornaments is provided with interlocking parts between a flexible hanger and the envelope, by means of which the hanger may be secured under the flap of the envelope, in such a manner that it is not likely to be dislodged in transit through the mail. 8 figures. E.G.S.

SCOTT, HAROLD S. Composite mailing envelope. U. S. patent 2,589,632. Filed Oct. 18, 1950. Issued March 18, 1952. 4 claims. [Cl. 229-92.8; changed to 229-73]

A combined multiple-panel envelope embodies a sender's envelope, a return envelope, a message section, and a coin holder, all incorporated in a single, composite foldable blank. 6 figures. E.G.S.

WEILLER, EUGENE W. Frame made of paper. U. S. patent 2,590,357. Filed Nov. 30, 1949. Issued March 25, 1952. 2 claims. [Cl. 40-155]

A three-dimensional picture frame for lithographic prints is constructed of paper elements which may be shipped flat and fitted together to form an interlocked structure. 4 figures. E.G.S.

WOOLSEY, WILLARD. Return envelope. U. S. patent 2,588,950. Filed July 12, 1947. Issued March 11, 1952. 3 claims. [Cl. 229-73]

A blank sheet is so constructed that it may be folded to form an envelope for second-class mailing; a single spot of adhesive serves to secure the envelope and at the same time permits postal inspection. The sealing portions of the envelope may be torn from the rest of the sheet to permit the opening of the envelope. On refolding in a different manner, the envelope may be used for sending first-class mail. 7 figures. E.G.S.

PAPER SPLICING

GERMAIN, LEO M. Process for splicing paper. U. S. patent 2,587,833. Filed Nov. 24, 1950. Issued March 4, 1952. 3 claims. Assigned to Shawinigan Chemicals Limited. [Cl. 154-116]

A heat-sealed splice is made in a paper web by subjecting to heat and pressure the overlapped ends of two webs interleaved with a self-supporting film of plasticized polyvinyl alcohol-acetate resin. The resin contains 45-65% by weight of polyvinyl acetate. The film contains 8-30% by weight of a water-soluble plasticizer which has at least one hydroxyl group per molecule. E.G.S.

PHYSICAL TESTING—PAPER—BASIS WEIGHT

KUEHNI, HANS P. Paper weight indicating equipment. Canadian patent 481,195. Filed April 25, 1947. Issued Feb. 19, 1952. 3 claims. Assigned to Canadian General Electric Company, Limited.

An apparatus is adapted for the measurement of the weight and/or tension of a traveling paper web. This is the same as U. S. patent 2,552,189; *cf.* B.I.P.C. 21: 756. 8 figures. E.G.S.

PLASTICS

GLAUBERT, SIEGFRIED. Dry process for agglomerating wood particles. U. S. patent 2,587,992. Filed Oct. 30, 1948. Issued March 4, 1952. 3 claims. [Cl. 106-163]

A dry process for the agglomeration of lignocellulosic materials (e.g., wood scrap, sawdust, and the like) comprises the steps of adding a 22% solution of valeric acid to the material, admixing a 15% aqueous sulfurous acid solution, mixing the mass, and subjecting it to a pressure of 285 p.s.i. at 120°C. E.G.S.

HENE, EMIL. Molding compositions from cellulose, formaldehyde, hydrocarbon, and alkali. U. S. patent 2,589,941. Filed Aug. 21, 1951. Issued March 18, 1952. 23 claims. Assigned to Usewood Corporation. [Cl. 260-9]

A curing or molding composition consists essentially of the dried reaction product of green sawdust containing unpolymerized lignin, 10-35% by weight of a liquid paraffinic hydrocarbon which has a low vapor pressure at the reaction temperature when the composition is cured, 8-12% by weight of formaldehyde, 2-8% by weight of an alkali (sodium or potassium hydroxide), and sufficient water for the homogeneous distribution of liquid ingredients without the formation of a paste. E.G.S.

PULP STONES

HOLTER, NORMAN F. Pulpstone. Canadian patent 481,244. Filed Sept. 7, 1946. Issued Feb. 19, 1952. 6 claims. Assigned to Norton Company.

A pulpstone is described in which the abrasive blocks are held to the concrete core by U-shaped irons or clamps which contact a large area of the blocks to retain them in place. 6 figures. E.G.S.

PYRITES

MCBEAN, KENNETH D. Methods and apparatus for roasting ores. Canadian patent 473,266. Filed Oct. 29, 1947. Issued May 1, 1951. 5 claims. Assigned to The Consolidated Mining and Smelting Company of Canada, Limited.

A furnace for the roasting of mineral sulfides (e.g., zinc sulfide) in gaseous suspension is designed to permit the arrangement of the apparatus associated with the furnace, such as the feed bins, fans, conduits, and conveyors, at a low level, preferably adjacent to the floor level. The amount of heavy supporting structure is reduced, and the control of the process is centralized at that level. 9 figures. E.G.S.

NOBLITT, HARVEY L. Thermal treatment of iron sulphides. Canadian patent 473,228. Filed April 2, 1949. Issued May 1, 1951. 5 claims.

A process for the extraction of iron and sulfur from sulfide ores (e.g., iron pyrite or pyrrhotite) comprises the steps of heating the ore under a reduced pressure at 600-700°C. and removing the liberated sulfur. E.G.S.

RESIN, SYNTHETIC

DANISON, ROBERT C. Flame retardant polyethylene and lignin containing composition. U. S. patent 2,588,362. Filed Aug. 17, 1949. Issued March 11, 1952. 4 claims. Assigned to Diamond Alkali Company. [Cl. 260-17.4]

A flame-retardant, drip-resistant composition comprises about 20-50% of a combination of one part each of chlorinated paraffin (70% chemically combined chlorine), antimony oxide, and a lignin-containing material (more than 30% lignin); the remainder of the composition consists essentially of polyethylene. E.G.S.

SHIPPING CONTAINERS

GRANT, JESSE R. Shipping case for fragile articles. U. S. patent 2,588,232. Filed Jan. 16, 1948. Issued March 4, 1952. 4 claims. [Cl. 229-23]

A corrugated fiberboard egg case incorporates fiberboard posts which are located at the corners of the case and at both ends of a central partition

and which are designed to strengthen the case vertically and thereby increase its stacking strength. 8 figures. E.G.S.

LOTH, GAYLORD. Bottom construction for paperboard containers. Canadian patent 481,221. Filed Feb. 2, 1950. Issued Feb. 19, 1952. 4 claims. Assigned to The Hinde & Dauch Paper Company.

The bottom of a paperboard container is composed of foldable sections which are integral with the upright walls of the container and which are reinforced by one or more interlocking members that bridge the abutting edges of the bottom sections to resist their separation. This is the same as U. S. patent 2,502,384; *cf.* B.I.P.C. 20: 620. 7 figures. E.G.S.

SPECTOR, SAMUEL. Packaged roll of floor covering. Canadian patent 480,996. Filed July 8, 1949. Issued Feb. 12, 1952. 8 claims. Assigned to Bonafide Mills, Inc.

A tubular cardboard shipping container is designed for the protective packaging of rolls of linoleum or linoleum rugs. 8 figures. E.G.S.

TYRSECK, WALTER J. Display container. U. S. patent 2,586,886. Filed Dec. 3, 1948. Issued Feb. 26, 1952. 6 claims. Assigned to Robertson Paper Box Co., Inc. [Cl. 229-28]

A combination display and shipping container for bottled beverages incorporates built-in partitions for forming subcompartments. 33 figures. E.G.S.

SHIPPING CONTAINERS—MULTIWALL BAGS

BRADY, CHARLES V. Bag closure. Canadian patent 481,328. Filed Jan. 30, 1950. Issued Feb. 26, 1952. 5 claims. Assigned to Bemis Bro. Bag Company.

A ravelable stitch closure for cloth or paper bags embodies a stitch-ripping pull tab which is stitched to the bag by ravelable stitching on the needle side of the bag and at the trailing end of the stitching. 5 figures. E.G.S.

BRADY, CHARLES V., and OTTINGER, AUGUST F. Bag closure. Canadian patent 481,327. Filed Jan. 30, 1950. Issued Feb. 26, 1952. 15 claims. Assigned to Bemis Bro. Bag Company.

A rip-cord closure for multiwall paper bags (e.g., for flour, grain, or animal feed) is designed to prevent any contamination of the contents of a bag by ripped stitches. 14 figures. E.G.S.

SULFITE WASTE LIQUOR

LARSSON, ERIC J., and JONSSON, JOHN H. Method of recovering chemicals in the manufacture of cellulose by digestion according to the alkali sulphite and/or alkali bisulphite methods. Canadian patent 481,256. Filed July 6, 1948. Issued Feb. 19, 1952. 7 claims. Assigned to Stora Kopparbergs Bergslags Aktiebolag.

A process is described for the recovery of alkali salts (i.e., sodium bicarbonate) from alkaline spent sulfite liquor. This is similar to U. S. patent 2,496,550; *cf.* B.I.P.C. 20: 541. E.G.S.

USCHMANN, CURT. Sulfite liquor treating processes and products. U. S. patent 2,585,977. Filed Oct. 13, 1947. Issued Feb. 19,

1952. 20 claims. Assigned to Cascades Plywood Corporation. [Cl. 260-17.2]

A method of treating spent sulfite liquor to produce a binder for use in the manufacture of wallboard and plywood veneer comprises the steps of heating the liquor to its boiling point and evaporating a substantial portion of the contained water; alkalizing the heated liquor with 5-15% (based on the weight of spent liquor) of caustic alkali; adding 15% (based on the weight of alkalized liquor) of furfural to the liquor; and maintaining the resulting liquid at its boiling point for 5-30 minutes. 1 figure. E.G.S.

SULFITE WASTE LIQUOR—AMMONIA BASE

ANDERSEN, CARL C. Treatment of waste sulphite liquor. Canadian patent 481,243. Filed Aug. 21, 1939. Issued Feb. 19, 1952. 2 claims. Assigned to Norsk Hydro-Elektrisk Kvaelstofaktieselskab.

A process for the production of an organic cation exchanger comprises the steps of treating spent ammonium bisulfite liquor with an acid cation exchanger, evaporating the liquor to dryness, heating further for 4-6 hours at 105-110°C., and freeing the resultant brittle mass from its water-soluble constituents by boiling with water. The product has an efficiency of 1.16 milliequivalents per gram. E.G.S.

SULFUR DIOXIDE

EDGE, HERBERT A. Recovery of SO_2. U. S. patent 2,589,684. Filed Sept. 20, 1948. Issued March 18, 1952. 7 claims. Assigned to Imperial Chemical Industries Limited. [Cl. 23-178]

A process for the recovery of sulfur dioxide from gaseous mixtures comprises the absorption of the sulfur dioxide by passage of the mixture through an aqueous solution of ammonium sulfite and bisulfite, and the recovery of sulfur dioxide by the treatment of the resulting solution with a nitric acid solution which contains 35-60% by weight of nitric acid. The quantity of acid used at most is 80% in excess of stoichiometric requirements. E.G.S.

TALL OIL

BENIGNUS, PAUL G. Water emulsifiable soil-poison concentrate. U. S. patent 2,588,318. Filed Feb. 7, 1949. Issued March 4, 1952. 2 claims. Assigned to Monsanto Chemical Company. [Cl. 167-43; changed to 167-31]

A water-emulsifiable soil-poison concentrate comprises about 34.0 parts of a chlorinated diphenyl containing about 42% by weight of chlorine, about 34.0 parts of trichlorobenzene, about 10.0 parts of pentachlorophenol, about 3.5 parts of isopropyl alcohol, about 17 parts of toluene, about 1.0 part of the condensation product of one part of tall oil and 1.9-2.1 parts of ethylene oxide, and about 0.75 part of dodecylbenzene sodium monosulfonate (all compositions by weight). E.G.S.

DREW, JOHN, and FUNDERBURK, JOE C. Method of preparing stabilized tall oil nitriles. U. S. patent 2,589,233. Filed March 14, 1950. Issued March 18, 1952. 6 claims. Assigned to Hercules Powder Company. [Cl. 260-97.5]

A process for the preparation of tall oil nitriles comprises the reaction of

tall oil in the liquid phase at 300-330°C. with gaseous ammonia in the presence of a zinc, magnesium, or strontium salt of tall oil carboxylic acids. E.G.S.

ESPOSITO, VITO. Hydraulic fluid composition. U. S. patent 2,588,970. Filed Oct. 17, 1949. Issued March 11, 1952. 11 claims. Assigned to R. M. Hollingshead Corporation. [Cl. 252-79]

A hydraulic fluid which is suitable for use in aircraft servomechanisms and braking systems comprises a mixture of 45 parts by weight of ethylene glycol, 35 parts by weight of water, and 15 parts by weight of the product of reaction at 350-450°F. and 2000-3000 p.s.i. of an alkylene oxide (e.g., ethylene oxide) and tall oil, in a ratio of about 14-18 moles of alkylene oxide per mole of tall oil. E.G.S.

MALOTT, RAYMOND A. Emulsion fluid for drilling wells. U. S. patent 2,488,304. Filed Feb. 10, 1947. Issued Nov. 15, 1949. 4 claims. [Cl. 252-8.5] Canadian patent 480,120. Filed Feb. 3, 1948. Issued Jan. 8, 1952. 4 claims. Assigned to Shell Development Company.

A well-drilling fluid consists essentially of an aqueous clay suspension, a mineral oil containing a sufficient amount of a water-soluble tall oil soap to emulsify the oil in the suspension, and 1-5% of gelatinized starch. 1 figure. E.G.S.

MARLING, PAUL E. Vinyl tall oil ester coating compositions. U. S. patent 2,587,497. Filed July 29, 1948. Issued Feb. 26, 1952. 8 claims. Assigned to Monsanto Chemical Company. [Cl. 260-23; changed to 260-27]

A coating composition is prepared by heating in an inert atmosphere at 400-600°F. vinyl tall oil esters and 0.01-5% (based on the weight of ester) of anthraquinone, and dissolving the resultant substance in a suitable solvent (e.g., petroleum spirits). The composition is applicable to wood, metal, ceramic materials, resinous products, textiles, or the like. E.G.S.

NEWSOME, JAMES W., HEISER, HAROLD W., and WALL, JAMES R. Treatment of sodium aluminate solutions. Canadian patent 480,825. Filed April 8, 1947. Issued Feb. 5, 1952. 2 claims. Assigned to Aluminum Company of America.

A method of inhibiting the precipitation of sodium organic salts from an aqueous sodium aluminate solution produced by digesting alumina-bearing ore containing organic material with caustic soda solution, during the concentration of the sodium aluminate solution by the evaporation of water therefrom, comprises the addition to the solution to be concentrated of at least one substance selected from the group consisting of rosin, rosin oil, and tall oil. This is the same as U. S. patent 2,440,378, which was issued April 27, 1948. E.G.S.

PALMER, ROBERT C. Process for separating rosin from tall oil. Canadian patent 481,543. Filed June 6, 1945. Issued March 4, 1952. 8 claims. Assigned to Newport Industries, Inc.

The separation of rosin and fatty acids (e.g., in tall oil) is facilitated by esterification of the fatty acids with a polyhydric alcohol (e.g., glycerol). This is the same as U. S. patent 2,432,332; *cf.* B.I.P.C. 18: 347-8. E.G.S.

PUTNAM, STEARNS T. Preparation of stabilized tall oil amines. U. S. patent 2,590,571. Filed March 7, 1950. Issued March 25, 1952. 8 claims. Assigned to Hercules Powder Company. [Cl. 260-97.5]

A process for the preparation of hydrogenated (or dehydrogenated) tall oil amine which is substantially free of emulsion polymerization inhibitors comprises the contacting of hydrogenated (or dehydrogenated) tall oil nitrile which is essentially free of abietonitrile with hydrogen under hydrogenation conditions in the presence of Raney nickel. E.G.S.

PUTNAM, STEARNS T. Preparation of stabilized tall oil nitriles. U. S. patent 2,590,570. Filed March 7, 1950. Issued March 25, 1952. 7 claims. Assigned to Hercules Powder Company. [Cl. 260-97.5]

A process for the preparation of a stabilized tall oil nitrile which is essentially free of emulsion polymerization inhibitors comprises the reaction of hydrogenated tall oil from which the abietic acid content has been eliminated by hydrogenation in the liquid phase at 250-400°C. with gaseous ammonia in the absence of a dehydration catalyst, and the continuous removal of water from the reaction mixture as it is formed, until substantially all the hydrogenated tall oil is converted to the nitrile. E.G.S.

ROBERTS, WAYNE B. Water-emulsifiable metallic paste pigments. U. S. patent 2,587,268. Filed Nov. 29, 1949. Issued Feb. 26, 1952. 7 claims. Assigned to Aluminum Company of America. [Cl. 106-290; changed to 106-123]

A water-emulsifiable, copper paste pigment which can be subsequently admixed with water to form a copper-base coating paint consists of 31.5% copper flake, 6.15% mineral spirits, 1.15% stearic acid, 13.7% tall oil, 3.7% casein, 0.7% sodium carbonate, 0.56% sodium bicarbonate, 0.362% borax, 0.063% sodium silicate, 0.415% sodium stearate, and 41.7% starch. E.G.S.

SCHMUTZLER, ALFRED F. Modified tall oil esters and process of preparing the same. U. S. patent 2,590,655. Filed Aug. 15, 1950. Issued March 25, 1952. 15 claims. Assigned to American Cyanamid Company. [Cl. 260-23]

A printing ink composition comprises an acrylonitrile- and styrene-modified tall oil ester of a saturated aliphatic polyhydric alcohol (e.g., sorbitol or pentaerythritol), a solvent, and a pigment. E.G.S.

SCHMUTZLER, ALFRED F. Printing inks from tall oil modified alkyd resins. U. S. patent 2,590,654. Filed April 16, 1949. Issued March 25, 1952. 9 claims. Assigned to American Cyanamid Company. [Cl. 260-22]

A printing ink comprises a vehicle which consists of the heat-reaction product of monomeric acrylonitrile with a tall oil-modified alkyd resin dissolved in a high-boiling petroleum hydrocarbon with a kauri-butanol value of 16-50, and a pigment. The acrylonitrile constitutes 4-28% by weight of the total quantity of resin. E.G.S.

SCHMUTZLER, ALFRED F. Tall oil modified alkyd resins and process for preparing the same. U. S. patent 2,590,653. Filed April

16, 1949. Issued March 25, 1952. 24 claims. Assigned to American Cyanamid Company. [Cl. 260-22]

A resin is prepared by heat reacting 1-25% of monomeric acrylonitrile and 2-34% of monomeric styrene with the reaction product of tall oil, fumaric acid, and ethylene glycol (all compositions by weight). The total amount of monomers represents 5-35% by weight of the resin. The product is suitable for use in the preparation of paints and enamels and in the manufacture of adhesives and masking tape. E.G.S.

SULLIVAN, WILLIAM L. Concentration of iron ores. Canadian patent 481,392. Filed Jan. 6, 1951. Issued Feb. 26, 1952. 1 claim. Assigned to Minerals Separation North American Corporation.

In the concentration of iron ores (oxides or carbonate with silica or quartz gangue) by froth flotation, a 2.5% aqueous solution of the sodium soap of crude tall oil is used as an anionic collector. E.G.S.

WRAY, ROBERT I., and ROBERTS, WAYNE B. Water emulsifiable metallic paste pigments. U. S. patent 2,587,266. Filed Aug. 10, 1948. Issued Feb. 26, 1952. 11 claims. Assigned to Aluminum Company of America. [Cl. 106-290; changed to 106-123]

As an example, a water-emulsifiable, aluminum paste pigment comprises 52.3% aluminum flake, 13.3% mineral spirits, 1.0% stearic acid, 23.4% tall oil, 6.36% casein, 1.22% sodium carbonate, 0.96% sodium bicarbonate, 0.63% borax, 0.72% sodium stearate, and 0.11% sodium silicate. The pigment is characterized by its stability, paste-retaining consistency, and freedom from agglomeration under storage conditions when sealed against the atmosphere. E.G.S.

WRAY, ROBERT I., and ROBERTS, WAYNE B. Water-emulsifiable metallic paste pigments. U. S. patent 2,587,267. Filed Nov. 19, 1948. Issued Feb. 26, 1952. 6 claims. Assigned to Aluminum Company of America. [Cl. 106-290; changed to 106-123]

A water-emulsifiable, casein-free, aluminum paste pigment composition consists of a mixture of 40-78% aluminum flake, 5-20% mineral spirits, 0.25-3% stearic acid, 15-45% tall oil, and 3-25% triethanolamine. E.G.S.

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